

DOCUMENT RESUME

ED 142 073

FL 008 736

AUTHOR Tucker, G. Richard; And Others
TITLE Bilingual Education: Current Perspectives. Volume 2: Linguistics.
INSTITUTION Center for Applied Linguistics, Arlington, Va.
PUB DATE Jul 77
NOTE 195p.
AVAILABLE FROM Center for Applied Linguistics, 1611 North Kent St., Arlington, Virginia 22209 (\$7.95 plus \$1.50 postage and handling for orders under \$10.00)

EDRS PRICE MF-\$0.83 HC-\$10.03 Plus Postage.
DESCRIPTORS *Bilingual Education; *Bilingualism; Bilingual Students; Child Language; Educational Policy; Language Development; Language Instruction; Language of Instruction; *Language Research; Language Usage; *Linguistic Theory; Second Language Learning; Sociolinguistics; *State of the Art Reviews

ABSTRACT

Recognizing a need for an objective, multidisciplinary and comprehensive look at the field of bilingual education, the Office of the Commonwealth of Puerto Rico and the Center for Applied Linguistics cooperated in a state-of-the-art study of the field. State-of-the-art papers were commissioned in four general areas concerning bilingual education: social science, languages and linguistics, law, and education. Each paper formed the central focus for a separate conference at which it was discussed and elaborated upon by specialists from various fields within a given discipline. This volume is the second in a series of four volumes that present a collection of the major papers and the viewpoints of the discussants. The focus of the volume is linguistics. The state-of-the-art paper is "The Linguistic Perspective," by G. Richard Tucker, and the viewpoints include: "Linguistic Theory," by Charles A. Ferguson; "Teaching Bilingual Children," by Gustavo Gonzalez; "Second Language Learning," by Evelyn R. Hatch; and "Research," by Christina Bratt Paulston. A bibliography concludes the volume.
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BILINGUAL EDUCATION: CURRENT PERSPECTIVES

Linguistics

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CENTER FOR APPLIED LINGUISTICS

FL008736

VOLUME 2

BILINGUAL EDUCATION: CURRENT PERSPECTIVES

Linguistics

CENTER FOR APPLIED LINGUISTICS

Library of Congress Catalog No.: 77-80381
ISBN: 87281-064-X

July 1977
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By the Center for Applied Linguistics
1611 North Kent Street
Arlington, Virginia 22209

Printed in the U.S.A.

Preface

The Center for Applied Linguistics, which serves as a national center for policy, research, and information in language and linguistics in the United States, is pleased to make this survey of *Bilingual Education: Current Perspectives* available to decision-makers and others interested in this important and rapidly-developing field. These volumes, and the conferences from which they came, reflect a concern on the part of the Center that significant decisions are constantly being made regarding bilingual education--by judges, lawyers, legislators, policy planners, administrators, teachers, parents--frequently in the absence of adequate information on which to intelligently base those decisions.

Believing that informed decisions are crucial in efforts to effectively meet the needs of non- and limited-English-speaking students, the Center brought together leading specialists in the United States concerned with bilingual education from a number of disciplines, to provide the most complete compilation of information possible on this subject. The results reflect the complexity of the situation, as well as the relative paucity of research data resulting from an almost total lack of federal funding for research. It is a national scandal that the United States has spent over half a billion dollars on bilingual programs, and less than one-tenth of one percent of this amount on the basic research needed to improve the quality of programs. If defense systems and medical drugs were developed in the same way, we would certainly fear for our national safety and health. But in education, programs continue to be planned, and legislation implemented, with little thought for research. It is ironic that although Canada has probably spent one-tenth as much money on bilingual programs as the United States, most of the research available on bilingual education has and continues to come from Canada. This is a situation which policy-makers urgently need to remedy, if efforts to insure equal education opportunity for limited-English-speaking students are to proceed with any confidence.

The Center for Applied Linguistics has been active since its inception in 1959 in the fields of teaching English to non-English speakers and the teaching of foreign languages, and in recent years has given priority to work in bilingual education in an effort to improve the quality and effectiveness of this approach to language instruction. Currently, the Center, in effect, serves as a national resource center in the field of bilingual education. Through its work in this field and its other research and service projects dealing with language and education, the Center has developed considerable capabilities for assisting schools and communities to meet the needs of multilingual populations.

The Center is grateful to the Carnegie Corporation of New York for providing financial support to this project, and to the Office of the Commonwealth of Puerto Rico in Washington, D.C. for their encouragement and funding of the development of a grant proposal.

I want to thank Leann Parker, who served as coordinator for the series of conferences, and helped see these publications through the press. She did an excellent job of a very complex task, and deserves our gratitude.

Rudolph C. Troike, Director
June 1977

Foreword

The nature of language and its relationship to culture is such that it is unfeasible to attempt to change one and not the other. Attempts have been made to teach English as a second language, as in the case of Puerto Rico, allowing the Puerto Rican society to maintain its native Spanish language and culture. In the case of Puerto Rico, the learning of English has become a necessity brought about by its close political and economic ties to the United States. In the past, the emphasis in the school system was placed on the study of English in order to Americanize the island.

Traditionally, the teaching of English as a second language in the United States has been geared toward the complete acculturation of foreign and ethnic groups to the mainstream of American society, without allowing these ethnic groups to use their mother tongue for any other purpose than social communication in their communities. However, the Puerto Ricans have determined that it is their right to keep Spanish as their first language and learn English as a second. In Puerto Rico, Spanish as the native tongue has been maintained for use not only in social settings but in overall economic and political communications, with English used as the language of technology.

The knowledge of more than one language has become a necessity in the world we live in today. Our close ties to each and every other member of the world has also made it necessary to understand the different cultures which comprise our society, without imposing any one language or culture on any member of that society.

This concern about the nature of language and culture and related education policies, both in the United States and Puerto Rico, led the Office of the Commonwealth of Puerto Rico (OCPRW) to inquire more about what is actually happening in the field of bilingual education in terms of research and practices. As the Center for Applied Linguistics shared many of these same concerns, the OCPRW decided to support a proposal by CAL to develop an in-depth, objective state of the art study of the field. We hope that the

papers presented in these volumes will bring a greater understanding of the issues and the state of our knowledge about various aspects of bilingual education and will provide a basis for sound decision-making in the future.

*Office of the Commonwealth of Puerto Rico
in Washington, D.C.*

June 1977

Introduction

One of the most noteworthy and controversial movements in American education over the past decade has been bilingual education. The concept of providing instruction in their own language to students who come to school speaking little or no English was given federal sanction in the 1968 Bilingual Education Act (Title VII, Elementary and Secondary Education Act). Since that time, bilingual education programs serving numerous language groups have multiplied across the country as federal, state and local funds have been allocated to this purpose. Momentum was increased by the landmark *Lau v. Nichols* decision in January 1974. The Supreme Court found that providing identical education programs for both English- and non-English-speaking students did not constitute equal education opportunity and that special language instruction was necessary to allow non-English speakers real access to the content of the education services. Although not strictly mandated by the *Lau* decision, bilingual education has been seen by the Office of Civil Rights (DHEW) and subsequent court rulings as a major way of meeting the special needs of these students.

As public monies have been spent, and as linguistic and cultural minorities have vied for visibility and power, questions about bilingual education have abounded. The questioning of fundamental claims has recently been accentuated with the advent of Congressional hearings in preparation for rewriting the federal legislation in 1978.

It is in this context of controversy that the Center for Applied Linguistics, long a supporter of greater education opportunity for American minority groups, felt the need to take a hard and objective look at what is known about the undeniably complex nature of bilingual education. Many academic disciplines are researching relevant aspects of bilingualism, language acquisition and teaching in a bilingual situation from their own perspectives. People in other fields such as law, legislation and education administration are more involved in policy aspects of bilingual education. Each

group deals with the issues in its own way and each has much to contribute in terms of understanding the complex issues; yet, each needs access to sound information on which to base further research and analysis of the field and for decision-making.

Recognizing the need for an objective, multidisciplinary and comprehensive look at the field of bilingual education, CAL sought support for a project which could produce such a state of the art survey. Sharing the Center's concern, the Office of the Commonwealth of Puerto Rico in Washington (OCPRW), under the directorship of Jose Cabranes, provided support for the development of a grant proposal which was subsequently funded by the Carnegie Corporation of New York. The OCPRW has continued to assist the project through the participation and advice of Carmen Delgado Votaw.

CAL commissioned state of the art papers on four general areas of bilingual education: social science research, language and linguistic research, legal precedents and aspects and education perspectives and education research. Each paper formed the central focus for a separate conference at which it was discussed and elaborated on by specialists from different fields within that discipline. The conferences were attended by invited representatives of various federal agencies and other organizations, whose questions and comments brought useful direction to the discussions. During the spring of 1977, a final panel representing the several fields was convened. Participants at this session included authors of the major state of the art papers and specialists from a variety of fields. Their task was three-fold: To share information across disciplines; to synthesize what each could empirically say about various issues and questions in bilingual education; and to assist in the development of a guide to pertinent research findings for decision-makers.

This series of volumes presents the collection of major review papers and viewpoints of the discussants. Each of the first four volumes presents the particular perspective and research of a particular area. Following the meetings, the writers of the major papers were permitted the opportunity to revise their papers. Discussants' papers, although written in reaction to early drafts of the major papers, have been included for their insightful comments and frequently detailed reviews of the literature of specific areas of the various fields. The final or "synthesis" volume of this series has been designed to summarize and organize the findings in the various fields, and to direct the reader to relevant discussions in the papers presented in the other volumes.

CAL expresses its gratitude to the participants at each conference for their enthusiasm and contributions to increasing the understanding of bilingual education (see the acknowledgments for a list of conference participants). In particular, we thank the authors of the major review papers: Joshua A. Fishman, G. Richard Tucker, Herbert Teitelbaum and Richard Hiller, and George Blanco.

The project was also assisted by the able guidance of a steering committee and several advisors whom we would like to thank for their participation in this effort. Special thanks go to

Rudolph C. Troike and Roger W. Shuy, whose overview of the issues as well as their support and recommendations provided valuable direction throughout the project. Appreciation is also due to Shirley Brice Heath, whose insight and suggestions during the development of the synthesis volume were particularly helpful.

The Center also wishes to express its sincere appreciation to the Carnegie Corporation of New York for its generous and indulgent support of the project, and to project monitors Vivien Stewart and Frederick Mosher for their advice and assistance throughout the project.

Without the assistance and moral support of a number of competent persons working as a team it would not have been possible to plan and carry out the multitude of details and preparations essential to making the conferences run smoothly and to readying the papers for publication. Thanks also go to CAL's Bilingual Education and Indian Education Programs for their assistance throughout the project. We particularly thank the following staff for their participation in the synthesis meeting: Rosario C. Gíngrás, Tracy C. Gray, Gilbert García, Lance Potter, and Phyllis Nudelman. We express our special appreciation to Cynthia H. Gusky for her expert secretarial assistance, to Diane Bartosh for her care in the copy-editing of the papers and in their final preparation for publication, and to Sonia Kandert for typing the first final manuscript.

L. Leann Parker, Project Coordinator
June 1977

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Keynote

The Linguistic Perspective

G. Richard Tucker

I shall try in this paper to examine carefully a small number of research studies with a view to drawing inferences about the effects of various approaches to bilingual education on the native and second language development of participating youngsters. I begin by reviewing the evolving state of our knowledge about native and second language learning and the implications of this knowledge for the recent widespread move in North America to bilingual education. Then I examine in detail an American, a Canadian and a Filipino approach to bilingual education because each has been the object of careful, critical and longitudinal evaluation, and each has been conducted in a very different social setting. I allude where possible to supporting or conflicting data from other evaluations and identify existing lacunae in the research conducted to date. I conclude by examining the implications of the available research for North American and international educators.

A BEHAVIORIST VIEW OF NATIVE LANGUAGE ACQUISITION

The question of how a child acquires the ability to speak and understand his native language continues to be a central concern for many linguists and psychologists. Until the late 1950's, researchers thought that the learning of language could be accounted for by invoking the same principles that seemed to apply to any other learning situation (Mowrer, 1954; Osgood, 1957; Skinner, 1957; Staats, 1968). Language learning was viewed by theorists who adopted behaviorist or mediational approaches as the formation of habits, or as the result of the child's learning a large number of discrete elements, and then gaining the ability through practice to manipulate these elements in a rapid and automatic fashion. The major role in the child's language development was attributed to the mother whose selective reinforcement of utterances appropriate to her language was seen to bring about the emergence of the child's phonological, syntactic and semantic systems. Child language was viewed as an erroneous or impoverished form of adult speech which gradually emerged through a process of training or selective reinforcement into the "correct,"

systematic speech characteristic of the adult members of a given community. Such a view seemed logical enough--particularly since the child's speech comes to resemble so closely that of his immediate family and the sociocultural group in which he grows up.

Implications for Second Language Learning/Teaching

These ideas attracted the attention of many language teachers, and the "audiolingual" method of foreign or second language teaching grew out of this behaviorist tradition of psychology (Chastain, 1971; Diller, 1971; Rivers, 1964). Of course, a number of distinct methods can be subsumed under the heading of an audiolingual approach, but in general, students are introduced to the target language by a teacher who has native or near-native command of the language. The students listen to, repeat, practice and then expand what the teacher says. Students are introduced orally to basic vocabulary and grammatical structures which they then practice until their control of the sequences becomes automatic. Generally, the introduction of reading and writing follows the development of listening and speaking skills. In the United States there was an upsurge in foreign language study following the second world war and an accompanying move toward the audiolingual approach (Parker, 1962), which, it was hoped, would produce students with relatively high levels of oral proficiency in the target language. This approach was not, of course, restricted to the teaching of foreign languages to students in the U.S.; but also was used to teach English as a foreign or second language domestically or abroad.

Foreign language teaching programs enjoyed widespread popularity during the early 1960's, and they spread downward through the elementary grades. An extensive range of teaching materials was developed and language laboratories proliferated. However, many educators soon became dissatisfied with the result of their traditional second or foreign language programs. Their disenchantment was apparently confirmed by the findings of several empirical studies which were carried out to assess the relative effectiveness of various language teaching methods (Arendt, 1967; Burstall et al, 1974; Olsson, 1969; Scherer and Wertheimer, 1964; Smith, 1970), although to my knowledge no definitive experiment such as that proposed by Hayes, Lambert and Tucker (1967) has yet been carried out.

Shortcomings of Traditional Language Teaching Programs

In American and Canadian settings, specific problems have arisen. The teaching of French-as-a-second language to English-speaking Canadian children and the teaching of English-as-a-second language to many minority-group American youngsters has typically produced disappointing results although the contributing factors may be very different. In Quebec, where French is introduced as a second language at the kindergarten level and remains compulsory

throughout high school, most young people manage to pass the required secondary school-leaving examinations in French language and literature, but may be unable to carry on a simple conversation. After studying French for 12 years, the majority are definitely not equipped to function in a French milieu. Clearly, something is wrong.

In the mid-1960's there arose in Canada a growing demand by parents for more effective programs of second language teaching. Likewise, in the United States, there has seemed to emerge a gradual awareness that many non-English speaking residents are not best served by being submerged in a monolingual English educational system where no attention is paid to the development of their native languages. Likewise various attempts to provide compensatory English as a second language (ESL) training for minority-group youngsters have not proven effective and disproportionately large numbers of non-English speaking youngsters in "traditional" American school programs perform less well than expected on a variety of achievement criteria or drop out of school altogether (see Gezi, 1975; U.S. Commission on Civil Rights, 1971). Thus, it would appear that one of the greatest challenges we are now facing is that of providing effective second language teaching within the context of a public school system while simultaneously nurturing the native language development and sociocultural traditions of heterogeneous student populations.

NATIVE LANGUAGE ACQUISITION AS A PROCESS OF CREATIVE CONSTRUCTION

Concurrent with the decline in popularity of the traditional second language methodologies came a radical shift in theoretical views of the language acquisition process. The operational definition of language learning underlying most recent research has shifted from one which considers the child's linguistic growth to be the result of reinforcement or shaping by his environment, to what Brown (1973) has described as a creative construction process. The learner is thought to engage actively, albeit unconsciously, in the gradual discovery of the rule system underlying the language to which he is exposed. Child language is no longer seen as a defective or haphazard form of adult speech, but rather as an orderly, rule-governed system which evolves through a series of predictable stages toward eventual adult competence. Recently a new area of investigation has captured the attention of researchers concerned with the systematic study of language acquisition: Are native language learning and second language learning analogous processes?

Implications for Second Language Teaching/Learning

The notion that second language learning, even within the classroom context, might reveal patterns and regularities similar to those found in native language learning emerged from early

error analysis studies. Researchers observed that in addition to errors attributable to interference from the learner's mother tongue there are other common systematic errors which cannot be attributed to interference, and which are found in the speech of learners from a variety of language backgrounds studying the same target language (Richards, 1973). During the past five years, a series of studies have been conducted to examine various facets of the speech system acquired by second language learners (e.g., grammatical functors: Bailey, Madden and Krashen, 1974; Dulay and Burt, 1974; Hakuta, 1974; Larsen-Freeman, 1975; negation: Milon, 1974; *wh* questions: Ravem, 1974A; auxiliary system: Cancino, Rosansky and Schumann, 1975; other "higher order" syntactic structures: d'Anglejan and Tucker, 1975; Hamayan, Markman, Pelletier and Tucker, 1976; Scott and Tucker, 1974; Selinker, Swain and Dumas, 1975; phonology: Tarone, 1974, 1976). The results of the research completed to date suggest that the performance of the second language learner is not random or disorganized as previously believed. His "errors" when producing sentences in the target language can be attributed to his attempts to discover the underlying rule system of the second language. In summary, although the young child acquiring his native language and the second language learner may go about the task in somewhat different ways, the developmental pattern of each is now thought to be both systematic and predictable. Thus, it has been speculated that the learner's progress can be traced through regular and predictable transitional stages which gradually come to approximate that of the native speaker (Corder, 1967; Nemser, 1971; Scott and Tucker, 1974; Selinker, 1972).

What is the relevance of these new theoretical insights? Most foreign or second language teaching programs--at least during this century--have been characterized by an attempt to replicate, as closely as possible in the classroom, the conditions *thought* to be conducive to native language acquisition. One of the implicit guiding principles seems to have been the tenet that the more closely foreign language pedagogy can be made to approach the natural conditions under which children acquire their mother tongue, the more successful the instruction will be (Palmer, 1926; Reibel, 1971; Sweet, 1899). In all probability, this tenet is basically correct. However, as we know, many language programs have achieved only limited success. This may be attributed, in part, to at least four factors: (a) our very limited (and in the early 1950's, probably incorrect) understanding of the way in which children learn to talk, (b) a great reliance on the so-called "scientific" application of linguistic principles to language teaching with a concomitant focus on the teacher and methodological issues rather than on the learner, (c) unsatisfactory attempts to reproduce in the classroom natural conditions conducive to language acquisition and (d) a lack of attention to sociocultural factors.

The results of empirical evidence and systematic observation during the last 10 years strongly suggest that the processes of

native language acquisition and second or foreign language learning are essentially analogous, but that traditional language teaching methodologies fail to exploit and, in fact, frequently ignore these similarities completely. Recently a number of innovative programs have been developed which, quite to the contrary, are based at least in part on the rationale that the student can most effectively acquire a second language when the learning of the language becomes incidental to the task of communicating with someone about some topic which is inherently interesting to the student. An important pedagogical notion which derives from insights about native language learning is that the major focus of activity in the classroom should be on communication--not just simulated dialogues--but genuine communication where the validity of a student's utterances will be judged on the basis of their content rather than on the appropriateness of their grammatical form. That is, the student must be allowed to err in the process of discovering and constructing for himself the rule system of the target language. This does not, of course, obviate the inclusion of formal integrated language arts components in such programs.

THE MOVE TO BILINGUAL EDUCATION

Educators, in diverse countries, including Canada and the U.S., are often faced with the necessity of teaching some of their pupils via a "weaker" language (see Mackey, 1967; Macnamara, 1967; Paulston, 1974). This situation may arise, for example, in a country where some foreign language of wider communication (e.g., English, French, Spanish) or an indigenous national language (e.g., Amharic, Pilipino, Swahili) has been adopted as a medium of instruction for all pupils; or in a country where immigrant children from diverse backgrounds enter a monolingual school system (e.g., Chicano, Franco-American or Portuguese youngsters in the United States); or perhaps even in a setting where speakers of a non-standard variety (e.g., Black nonstandard English, Haitian Creole) attend a school where the teachers and the texts employ only a more prestigious standard form. In situations such as these, it would seem appropriate to consider the adoption of some form of bilingual instruction.

In addition, programs of bilingual instruction have been used in many countries where a serious desire exists to develop pupils' competence in each of two official languages (e.g., Flemish and French in parts of Belgium; English and French in parts of Canada; Afrikaans and English in parts of South Africa). The implementation of bilingual programs in situations such as those would seem to be particularly appropriate in light of several factors: (a) the spread of universal primary (and in many countries secondary) education, (b) an increasing concern with the validity of educational goals, (c) the desire to develop permanent functional literacy for the greatest possible number of citizens, (d) a belief that language can serve as a vehicle to foster a sense of

self-esteem as well as a sense of ethnic awareness, identity or pride and (e) recent theoretical insights into the nature of native and second language acquisition (in general: Engle, 1975; Troike and Modiano, 1975; more specifically in Canada: Lambert and Tucker, 1972; in Haiti: de Ronceray and Petit-Frère, 1975; in Mexico: Modiano, 1973; in Nigeria: Fafunwa, 1974; in the Philippines: Davis, 1967; in the United States, Andersson and Boyer, 1970; Cohen, 1975A; Ramirez and others, 1977).

Goals of Bilingual Education Programs

In general, bilingual education programs seem designed to achieve one of two basic goals. Some seem clearly formulated to foster equal facility in both languages with a concomitant development of appreciation for the values and traditions of both ethnolinguistic groups; others use the development of early skills in the child's mother tongue as a "bridge" leading toward a more effective development of competence in some other target language. In programs of this latter type, study via the mother tongue is often abandoned after a transition has been made to the second language.

These "goals" are admittedly very simplistic, but it is my belief that many parents and educators have not yet articulated clearly their expectations for the academic, affective, cognitive, linguistic or social development of children who participate in bilingual programs. It is clear that a complex array of personal, pedagogical, social and political factors will influence the choice of goals; but it is absolutely essential that consensual goals be locally agreed upon before the efficacy of bilingual programs can be adequately assessed. Consider for a moment the development of language skills within a bilingual program. Is it, for example, realistic to expect the pupil to develop native-speaker facility in each of the four skills of the target language? Should the goal, rather, be for the individual to develop native-like passive skills together with the communicative ability (Savignon, 1972) necessary to express his ideas? How do prospective employers, teachers or other educated speakers react to spoken or written messages that, although comprehensible, are marked by various lexical, phonological or syntactic deviations?

It may, for example, be perfectly acceptable and even laudable for an English Canadian member of the Ontario Provincial Parliament living in Toronto to comprehend spoken and written French with ease while producing utterances which are markedly deviant. It might, however, be totally unacceptable for an English-Canadian member of the Quebec National Assembly to perform similarly. The task of defining a set of locally appropriate goals undoubtedly necessitates an understanding of the sociolinguistic context in which the graduates of the bilingual program will be called upon to operate (see Cohen, 1975A).

It should be noted, however, that it has been my personal experience that even in Quebec where English-French bilingual programs for anglophone youngsters have been widespread during the

past decade, there as yet exists no consensus among parents, curriculum specialists, classroom teachers or ministry officials concerning the goals for the programs other than the broad directive contained in the recently enacted "Official Language Act:"

The curricula must ensure that pupils receiving their instruction in English acquire a knowledge of spoken and written French, and the Ministry of Education shall adopt the necessary measures to that effect.

The Ministry of Education must also take the necessary measures to ensure instruction in English as a second language to pupils whose language of instruction is French. (*Bill No. 22, Title III, Chapter V, Article 44*)

Thus, I conclude that serious attention should be devoted to the task of defining, publicizing and implementing locally appropriate goals. Let us now consider the research which has been conducted to date.

An Overview of Research to Date

Diverse innovative approaches to bilingual education have been tried in many places, here in North America and abroad, but relatively few have been systematically evaluated or described. Longitudinal evaluations have been noticeably lacking (see, however, in Canada: Lambert and Tucker, 1972; Lambert, Tucker and d'Anglejan, 1973; Bruck, Lambert and Tucker, 1974; Bruck, Lambert and Tucker, 1975; Bruck, Lambert and Tucker, in press; in the Philippines: Davis, 1967; Revil et al, 1968; in the Union of South Africa: Malherbe, 1946, 1969; in the United States: Cohen, 1975A; Cohen, Fathman and Merino, 1976). The paucity of critical, longitudinal studies can be attributed to a variety of sources such as the transience of potential researchers, the unwillingness or inability of funding agencies to commit funds for a multi-year or even decade-long project and the unfortunate tendency for administrators to regard initial results as a major criterion for continuing or terminating a proposed lengthy project (Campbell, 1969). Nevertheless, as I have suggested elsewhere (Tucker and d'Anglejan, 1971):

The notion of an innovative approach to education implies, even necessitates, a comparison of the new program with the traditional approach. It is essential that educators not lose sight of the basic goals and responsibilities of the school curriculum when setting up new programs. A successful bilingual education program, with its emphasis on language and social studies, must not be paid for by deficits, other than very temporary, in important skills or content subjects. Unless it can be reliably demonstrated, over a reasonable span of time, that a particular model of bilingual education (e.g.,

Spanish-English for Chicano children) has, as its product, pupils equivalent to or significantly ahead of their traditionally instructed counterparts (e.g., Chicano children instructed monolingually via English) with reference to each of the four working hypotheses mentioned earlier, the program should be terminated.

In that article, Alison d'Anglejan and I proposed a framework for the evaluation of bilingual programs. We suggested that researchers adopt a series of four widely held beliefs (we regard them as myths) as their working hypotheses. One of those is relevant to the present paper: That children who are instructed bilingually will not acquire acceptable native language or target language skills.

THE ASSESSMENT OF LANGUAGE PROFICIENCY

As a researcher with many years experience assessing language training programs in widely disparate settings, I remain very troubled by the question: How does one validly assess language proficiency? There exist, of course, a variety of handbooks or manuals which purport to describe standardized methods for measuring language proficiency (Harris, 1969; Lado, 1961; Valette, 1967) as well as numerous articles which suggest alternative approaches or urge caution upon the researcher (Palmer and Spolsky, 1975). Personally I have been driven to the conclusion that we may have not yet developed the tools to assess adequately or validly an individual's level of language proficiency. That is, I believe that we have not yet conducted the necessary longitudinal "tracer" studies to enable us to state with any degree of precision the probability that a pupil who has followed a particular program of instruction will actually go out into the community and be able to function comfortably on a day-to-day basis using the target language.

Nevertheless, evaluators have tried in a variety of ways to examine the effects of different educational interventions on the native and second language development of various aged pupils from diverse backgrounds. In general, most have chosen to employ standardized norm referenced (or more recently criterion referenced tests, often of dubious appropriateness (see Cronbach and Drenth, 1972; Samuda, 1975), to describe the listening, speaking, reading and writing skills of pupils following an "innovative" or "experimental" program. Despite the apparent shortcomings of available instruments, I believe that we can draw useful, but cautious, inferences from the results of such tests if they have been administered by careful researchers who are sensitive to the problems inherent in this type of research and who have taken care to compare the development of the "experimental" pupils with that of a similar matched group of pupils following a "traditional" or control program. Furthermore, a number of researchers have recently begun to examine empirically the development of what we

might refer to as functional or communicative skills (e.g., the ability to apply for a job, to read selections from a newspaper, to understand a news broadcast on the radio). The two approaches and the resulting data are, I believe, complementary.

In the section to follow, I shall present the results from a small sample of studies which bear on the development of each of the four language skills. Despite the plethora of anecdotes, informal reports and published articles on bilingual education programs, particularly those in the United States, I have chosen to focus my attention on a small number of careful, critical and longitudinal rather than cross-sectional studies. I shall comment, when appropriate, on the methodological adequacy of the studies and on the generalizability of the results.

At the risk of introducing an element of artificiality, I shall present and discuss separately results from major evaluations of three bilingual programs--conducted in Canada, in the Philippines, and in the United States. I shall examine the development of listening, speaking, reading and writing skills in the pupils' mother tongue and in their second language. I shall allude, when appropriate, to the results of research conducted in other settings.

BILINGUAL EDUCATION IN CANADA: THE ST. LAMBERT EXPERIMENT

Eleven years ago, in September 1965, the South Shore Protestant Regional School Board began its first experimental French "immersion" classes for a group of English speaking kindergarten children. This project, designed to promote functional bilingualism through a policy of home-school language switch, was initiated by the Board on an experimental basis in response to numerous requests from parents living in the community. The program which started out with two kindergarten classes in one school during 1965-66 has expanded throughout the South Shore system. During the school year 1975-76, this innovative program is being offered from K-10. This year approximately 40 percent of all eligible kindergarten pupils have enrolled in an immersion program on the South Shore.

The kindergarten curriculum has been left largely to the discretion of the participating teachers. They stress the development of vocabulary and passive comprehension skills in French along with the other traditional kindergarten activities. In contrast to the second language methods typically used with English speaking children, they use a direct native language approach. At the end of the kindergarten year, the children are assessed through direct observation by teachers and evaluators, but no attempt has ever been made to test them formally. By the end of the school year, most have built up an extensive recognition vocabulary and attempt to use single French vocabulary items as well as occasional short sentences. Productive skills vary considerably from one child to the next, but, without difficulty, all are able to comprehend simple children's stories as well as their teacher's directions.

At the grade one level, reading, writing and arithmetic are introduced *exclusively* via French. No attempt is made to teach the children to read in English, and parents are specifically urged not to do so in the home. In grade two, two daily half-hour periods of English Language Arts are introduced. The rest of the curriculum remains essentially the same, with reading, writing, arithmetic and elementary science being taught in French. The amount of instruction in English is increased gradually and by grade seven slightly more than 50 percent of the curriculum is taught in English with the balance in French. It should be emphasized that formal language instruction, via integrated language arts programs, is an integral part of "immersion" education.

At the request of the Board authorities and the Minister of Education of the Province of Quebec, we (Lambert and Tucker, 1972) were asked to formally evaluate the program. The progress of the pupils in a Pilot Experimental class and in a Follow-up Experimental class has been compared each year with carefully selected Control Classes of French children instructed in French and English pupils taught in English. The Control Classes were selected from schools in comparable middle-class neighborhoods. In view of the well-documented influence of social class on language and intellectual development, and since the number of students involved was relatively small, considerable care was taken to equate very carefully the Experimental and Control Classes on intelligence and socio-economic factors.

No attempt whatsoever was made to preselect or screen children for the Experimental classes on the basis of IQ or other variables; thus both the Pilot and Follow-up classes (in fact, all subsequent classes) contained children with a wide range of IQ, and even had a few pupils with recognized perceptual-motor deficits.

We have now been following these two separate experimental groups of children, the Pilot and Follow-up classes, since they began their formal schooling. Thus far, after 11 years, we are satisfied that this novel program of second language teaching has not resulted in any native language (i.e. English) deficit; and that the pupils have developed an ability to understand, speak, read and write French in a way that English Canadian pupils who follow a traditional FSL program never do.

The Assessment of Listening Skills

In the primary grades, we routinely administered Peabody Picture Vocabulary Tests in English and in French (to measure breadth of vocabulary, not IQ), and multiple-choice type listening comprehension tests in English and in French to the experimentally instructed children. Furthermore, we administered a tape-recorded adaptation of a referential communication task developed by Glucksberg, Krauss and Weisberg (1966). Likewise, we administered the English versions to a control group of anglophone youngsters following a traditional English program and the French versions to a comparable control group of francophone

youngsters. It seems appropriate to conclude from our data (Lambert and Tucker, 1972) that the performance of the experimentally instructed pupils in their mother tongue did not differ from that of their English control counterparts and, in fact, we ceased testing this skill following our evaluation at the grade four level.

With regard to the French language development of the experimentally instructed pupils, it has been the case that French speaking youngsters, in general, perform consistently better than the experimental group on the Peabody Picture Vocabulary Test and on multiple-choice tests of listening comprehension, but not on the auditory decoding tasks. It is also interesting to note that where comparisons have been made, the Experimental pupils perform better on French listening comprehension tests than anglophone students who have had FSL training (Swain, 1974). This latter finding has recently been confirmed by Bruck, Lambert and Tucker (1976) who compared the abilities of grade seven French youngsters, English youngsters who had participated in a home-school language switch program and English youngsters with FSL training to understand recorded French news broadcasts.

In general, similar patterns of results have been reported by other Canadian researchers who are conducting detailed, longitudinal studies in diverse settings, using different testing instruments (Barik and Swain, 1975; Edwards and Smyth, 1976; Genesee, Morin and Allister, 1974; Genesee and Chaplin, 1975; Polich, 1973; Swain, 1974).

The Assessment of Reading Skills

This phase of the evaluation of bilingual programs strikes me as especially important because of two persistent questions which always arise. Whenever educators consider the adoption of some form of bilingual education, they must decide in what order they will sequence the introduction of instruction via the mother tongue and the second language, and furthermore in what order they will sequence the introduction of reading in the two languages to achieve optimal results in their particular socio-linguistic setting.

In the primary grades, we routinely administered the Metropolitan Achievement Test (MAT) to assess English reading skills and the locally developed, standardized and normed Test de Rendement en Français. For the present discussion, I shall present the results of our testing at the grade one, two and seven levels (adapted from Tucker, 1975). At the kindergarten and grade one level the Experimental children had received all instruction (including the development of reading skills) in French.

On the Test de Rendement en Français, the Experimental group overall performed as well as the French control group. This test was composed of three parts--word discrimination (10 items), sentence comprehension (10 items) and knowledge of appropriate word

order (10 items). It is interesting to note that the Experimental children, as a group, performed very well on the first part, but relatively poorly on the second and third parts. The pupils, in general, seemed to have very little difficulty with word discrimination per se.

Although they performed relatively poorly on the word-order subtest where they had to indicate which of a string of words (e.g., *sur Raoul rame le lac*) would likely be the last word in the correctly ordered sentence, it is interesting that articles were selected for the last slot on only 2 of 494 possibilities; prepositions, 4 of 152; auxiliaries, 3 of 114; and possessive pronouns, 5 of 38. These data indicate that the pupils had developed a relatively accurate awareness of the usual positional restrictions--at least for these parts of speech.

The relatively poor performance by the group on the sentence comprehension subtest seems to be attributable to their still limited vocabulary. It should be remembered, however, that the Experimental pupils, as a group, did perform as well as the French-speaking control group.

The story was somewhat different on the various parts of the MAT. On this test, the English control group performed significantly and consistently better than the Experimental group. This was not surprising, however, since the Experimental pupils had received no specific tuition whatsoever in English. Quite to the contrary, it was extremely surprising that the Experimental pupils scored between the 20th and 40th percentiles on the subtests of Word Knowledge, Word Discrimination and Reading. It seems likely that they compensated somewhat for their relatively poor English word discrimination ability by using their native speakers' intuition about English syntax. In fact, it seemed to testers at the time that the pupils were actually "learning to read" while they were taking the test.

In addition to examining the pupils' performance on the various subtests, we also computed several Pearson product-moment correlations. It is interesting that the correlation between the group's performance on the French and the English reading tests was significant. Furthermore, the correlations between a non-verbal measure of intelligence, Raven's Progressive Matrices, and the French total reading and the English total reading tests were both nonsignificant. These results suggest that there was variability in reading ability among the Experimental pupils, and that reading achievement in French (a SL, but the only language of instruction at this level) but not nonverbal IQ, was a good predictor of reading achievement in English--surely evidence for a positive transfer of skills across languages.

During grade two the pupils received two 35-minute periods of English Language Arts instruction each day. At the beginning of grade two, the pupils were formally "taught" to read in English by a language specialist. At the end of the year, standardized English and French language tests were again administered to these pupils and to equivalent groups of control youngsters.

On the Test de Rendement en Français, the Experimental group, on the average, performed as well as the French control group. The test at this level consisted of five parts: sentence completion (8 items), identification of words belonging to specified parts of speech (8 items), determination of grammatical gender (4 items), spelling (5 items) and identification of verb tense (5 items).

On the MAT, the Experimental pupils performed very differently than they had at the end of grade one. At grade two, they performed as well as the English Control group on the subtests of word knowledge, word discrimination and reading, scoring at the 85th, 80th and 75th percentiles, respectively. Thus, the relative deficit that they had displayed in English reading skill at the grade one level had completely disappeared by the end of grade two.

We again computed several Pearson product-moment correlations. Once again, there was a significant, positive correlation between the pupils' French total reading and English total reading. Furthermore, the correlations between their initial Raven's Progressive Matrices scores and their French total reading as well as their English total reading tests were both nonsignificant. There was also a positive and significant correlation between the pupils' performance on the French reading tests at grades one and two as well as a marginally significant correlation between their performance on the English reading tests at grades one and two.

The amount of English instruction had been gradually increased following grade two so that the program came to approximate a balanced program of bilingual education with the students studying English Language Arts, French Language Arts, some content subjects in English and some content subjects in French. At the end of grade seven, the MAT was administered to the pupils. In addition, they and a group of French-speaking youngsters were given a French reading test designed by our research group. This test consisted of having them answer a series of questions based on a story selected from *La Presse*--a Montreal French language newspaper. In addition, the pupils were asked to complete one French language application for a summer job and another for a credit card.

The Experimental pupils performed as well as the French youngsters on the job application and on the credit card application; they performed significantly less well than the French youngsters on the reading selection. It is also interesting to note that where comparisons have been made, the Experimental pupils perform better on French reading tests than anglophone students who have had only FSL training (Bruck, Lambert and Tucker, 1976).

The Experimental pupils performed above grade level on all sections of the MAT. Once again, we computed several Pearson product-moment correlations. At this level, there was a positive and marginally significant relationship between the group's

performance on the English reading and French reading (*La Presse*) tests. Furthermore, the correlations between their initial Raven's Progressive Matrices scores and their French reading as well as their English reading tests were again both nonsignificant.

What generalizations, if any, can be drawn from the data which I have just presented? Swain (1974), who had been associated with the evaluation of a number of French-English bilingual programs for English-speaking youngsters in Ontario, has concluded that delaying formal English study until the grade two or three or even four level does not in any way adversely affect the capacity of students to master English skills when they are finally introduced. Cameron, Feider and Gray (1974), Cziko (1976) and Polich (1973) have all reported a spontaneous transfer of reading skills to the children's native language as a result of immersion instruction in French. Furthermore, Swain has found in her analysis of a bilingual program in St. Thomas, Ontario, that English-speaking children who follow a program of total French immersion during kindergarten and grade one with English Language Arts introduced only at grade two perform as well as, and in some cases better than, a comparable group of youngsters who receive 50 percent of their training in English and 50 percent in French from kindergarten through grade two. However, it must be remembered that a majority of these studies have been conducted with middle-class youngsters who come from homes where literacy is actively encouraged.

The Assessment of Writing Skills

This phase of the assessment of our Canadian bilingual programs appears to have been the most neglected. We conducted no evaluation whatsoever of the children's English or French writing skills at the first four grade levels. However, several subtests of the MATs did assess related "mechanical" skills, and it is interesting to note that the experimentally instructed pupils, in general, did not score as well as their English control counterparts at the grades three and four levels of the subtests of capitalization and punctuation. This relatively poorer performance presumably reflected the lack of explicit training with the English forms.

We first attempted to assess the writing skills of the pupils at the grade five level. We did so in response to a specific request by several English Language Arts teachers and school board members who feared that the pupils' ability to express themselves in writing in their mother tongue was being adversely affected by their lack of early formal training in English. They worried not only about the pupils' abilities to capitalize, punctuate and spell correctly; but more importantly about their ability to organize and express their ideas in writing.

Thus, at the grade five level, we asked Experimental and English Control children to write an English composition on the following topic (Lambert, Tucker and d'Anglejan, 1973): "Suppose your school was chosen to write and publish a magazine for students your own age, to be read by young people all over the province. You are chosen to be the editor-in-chief. Tell what you would do to organize a team to help you get started, and then tell what you would like to see go into the magazine." The compositions identified only by code numbers (to be referred to subsequently as a "blind" procedure) were read by a grade five teacher from a different local English-language school. She was asked to score the compositions as she would those of her own class, using her own criteria, and to assign a rating from 1 (unsatisfactory) to 10 (excellent) to each composition. She later indicated that she attributed great importance to the pupils' ideas, originality and interest and less importance to their grammar and punctuation. The Experimental and French Control children were asked to write a French composition on a different, but we hoped, comparable topic. Both sets of compositions were evaluated in the same manner.

The Experimental children's English compositions were rated significantly more favorably using the rating scale described above than those of the Control class while there was no significant difference between the groups for the French compositions. No other analyses (e.g., lexical, syntactic, thematic) were conducted. Thus, we had some positive indication, albeit relatively superficial, that the intervention had no detrimental effect on the pupils' English writing skills, and that they were developing French writing skills comparable to those of French youngsters.

At the grade six level (Bruck, Lambert and Tucker, in press), we did not assess English-language writing skills; but we did ask Experimental and French Control children to write a composition in French on the following: "You wake up after sleeping for 20 years. How does the world appear to you, what changes do you notice? If life better?" The compositions were each scored "blind" by two francophone teachers. This time they were asked to assign separate ratings (using a 10-point scale) for form and for content. The compositions written by members of the two groups were judged to be equivalent on the "form" dimension, but those of the French Control group were evaluated significantly more favorably on the "content" dimension. Once again no further analyses were performed and it is difficult to interpret or to use (e.g., for purpose of formative evaluation) these data.

We made one further attempt to assess the pupils' French writing skills at the grade eight level (Bruck, Lambert and Tucker, 1975). On this occasion we asked the children to think about (over a weekend) and then to design and write in class a proposal along the lines of the "Opportunities for Youth" summer projects sponsored by the federal government. These compositions

were evaluated for *form* by two French Language Arts teachers using a series of 5-point rating scales to assess sentence accuracy, vocabulary, organization of material/content of ideas, and overall impression as well as two 3-point rating scales to assess spelling (orthographe d'usage and orthographe grammaticale). The raters were also asked to indicate the probable mother tongue of each student. Two French-speaking administrators who screen applications for one of Canada's granting agencies in Ottawa rated the *content* of the compositions. They used a 7-point rating scale ranging from highest priority--definite funding to rejected--would not fund. With regard to *form*, there were no significant differences between the groups in terms of sentence accuracy, organization form or the overall assessment. The breadth of vocabulary of the French control group, however, was reported to be significantly greater than that of the Experimental group. The mother tongue of 82 percent of the pupils in each of the two groups was correctly identified by the Language Arts teachers. With regard to *content*, the raters proved to be harsh in their evaluations. All compositions were rated relatively negatively. This finding was probably due to the raters lack of familiarity with the writing of young children. It was interesting to note that mother tongue was correctly identified by these raters for 94 percent of the Experimental pupils (who were English, but were writing in French), but for only 56 percent of the Control pupils (who were French and writing in French). Unfortunately, no further analyses were performed with these compositions. It would have been intriguing to isolate the causes (lexical or syntactic) that triggered the misidentification of so many French-control compositions.

An extensive evaluation of the English-writing skills of students at various grade levels in bilingual programs within the greater Montreal area has also been conducted by Genesee (1974B). He asked students to select one of three topic sentences and to write a composition based on that topic. Each composition was scored "blind" by two English Language Arts teachers on a series of nine scales: spelling, sentence accuracy, sentence complexity and variety, organization, originality, length, punctuation, vocabulary and overall impression. Compared to their English control counterparts, his results indicated that the bilingually educated students "had no difficulty expressing themselves in written form." An extensive and, I believe, potentially more useful evaluation was carried out by Swain (1975). She analyzed short stories written in English and in French by grade three pupils who had been participating in immersion programs.

The stories were written in response to picture stimuli such as the following: a picture showing a house on fire, a lady at a second story window, a firetruck and two firemen--one manning a hose and one going up a ladder to the window. The stories were analyzed with respect to: (a) vocabulary skills (diversity, types of errors by part of speech), (b) technical skills (spelling,

capitalization and punctuation), (c) grammatical skills (sentence types and syntactic errors) and (d) creativity (e.g., elaboration of relevant events, logical chronological sequencing, selection of proper names for characters). Swain concludes her extremely detailed report with the observations that "the performance of the grade three French immersion pupils in writing English stories compares favorably with that of their English-instructed peers considering the limited time devoted to formal school instruction in English Language Arts relative to the regular English program pupils," and that "generally speaking, the French stories written by the French immersion pupils contain more errors than their own English stories." She then identifies areas of particular difficulty. She includes numerous examples throughout her paper as well as two appendices which contain all of the English and French spelling errors.

The general conclusions to be drawn from these reports would seem to be: (a) That the native language composition skills of anglophone pupils participating in French-English bilingual programs are not adversely affected; (b) That the pupils' written performance in their second language, although good, remains distinguishable--even after as many as eight years of participation--from that of native speakers; (c) That the evaluation of writing skills is an area which requires a great deal of additional (and I believe linguistically more sophisticated) work. The continuing evaluation of writing skills by means of 5-point rating scales seems somewhat dissatisfying in view of the many exciting second language acquisition studies currently appearing in the literature.

The Assessment of Speaking Skills

A review of much of the relevant Canadian research on the development of French speaking skills has recently been completed by Spilka (1976). She organized her paper around an intriguing set of questions:

What is the exact level of proficiency [in the second language] reached by immersion [i.e. bilingual education] students? They are doing better in French than children educated by traditional methods, but how much better? Could they pass as native francophones? If not, is their pronunciation the only thing that sets them apart? What other features are characteristic of their ways of speaking?

My experience with our program and my reading of the literature convinces me that we cannot yet answer the majority of her questions. I now believe that much of the early summative evaluation was organized in such a way that it could not provide valid answers to these questions. This, I think, reflects the fact

that when the early research was conducted, techniques for evaluating spontaneous speech had not yet been refined.

The original techniques which we used to assess the French speaking skills of the Experimental children involved tape recording children's retelling of stories or their creation of stories to describe a series of cartoon pictures (Lambert and Tucker, 1972). Francophone linguists listened "blind" to recordings of Experimental and Control pupils and rated them on a series of 5-point rating scales designed to assess, for example, overall fluency, grammar (including errors of gender, tense, choice of auxiliary, word order), rhythm and intonation, pronunciation and use of liaison. We found, in general, that the oral productions of the native speakers were evaluated more favorably in grades one-four than those of the students in the bilingual program although occasionally, the Experimental pupils were found to be similar to the native speakers on certain scales (e.g., rhythm and intonation, liaison). The same general techniques have also been used by other Canadian researchers who have reported similar results (Genesee, Morin and Allister, 1974; Genesee and Chaplin, 1975). Spilka (1976), however, noted:

Most of all it became obvious that the procedure did not account sufficiently for the inherent complexity of syntax and failed to distinguish between grammatical but simplified grammar on the one hand, and more sophisticated constructions that would indicate greater mastery in spite of superficial errors. Linguistic usage, then, had to be considered apart from communicative competence....

By way of illustration, Spilka reported that "French linguistic maturity was clearly lagging in Experimentals, yet this was seldom a barrier to communication: Only one sentence in the entire sample [of 3086 sentences produced by grade four, five and six Experimental pupils] could not be deciphered." A number of researchers including Spilka have begun to approach the analysis of oral production skills in a different way. Some have turned their attention to reanalyzing the collected tape recordings from a more "linguistic" point of view (Setton, 1974; Spilka, 1976, forthcoming). This would seem to be a useful endeavor inasmuch as the tapes represented a potentially rich source of longitudinal data concerning certain aspects of the second language development of a sizeable sample of native speakers and second language learners over a period of six years.

Spilka, for example, in an examination of what she termed the "performance sophistication" of the learners examined factors such as the children's rate of speech; their use of embedded sentences (and associated avoidance strategies) and their stylistic flexibility. She found that the bilingual children, for example, avoid certain structures, are less likely than native speakers to use cleft sentences, topicalization or sentential objects, but

are more likely to use relative clauses. She noted a tendency for the younger children to borrow from formal story telling and introduce literary devices at the conversation level. She arrived at the intriguing conclusion that "the effect of such speech style differences is to make the bilinguals' production at once better and worse than the native speakers' (Spilka, 1976)." Clearly more research of this type would be desirable.

Along a slightly different line, several researchers (Hamayan, Markman, Pelletier and Tucker, 1976; Naiman, 1974; Swain, Dumas and Naiman, 1974) have proposed alternative techniques for examining the development of speaking skills with second language learners. They have used various elicited imitation or elicited translation techniques to assess the child's evolving competence in his second language. The validity of the technique rests on the assumption that a native-speaking child, or a second language learner, when presented with a sentence longer than his immediate memory span, will pass it through a type of filter--his interim grammar--before repeating it. If a specific syntactic feature is not part of an individual's grammar, that element would be distorted during production. The research to date has revealed a consistent pattern of French errors by English-speaking bilingually educated children which appears to vary with the number of years of instruction. This suggests that they possess a developing rule system, at least for selected syntactic features, which differs from that of child native speakers. In a complementary series of studies, Hamayan (1976) has begun to examine the learner's awareness of grammatical deviance and his ability to compensate for it. It would seem that these alternative research approaches may also provide useful formative information for teachers and curriculum developers although Tarone, Swain and Fathman (1976) urge caution in its application. They conclude that the data thus far collected have been narrow in scope, highly variable and remain to be replicated.

Along a quite different line, we have recently begun to explore the acquisition of what we have called "functional" bilingual skills. Thus, in an effort to examine the French-speaking skills of children educated bilingually from a slightly different perspective, we showed the children a seven-minute silent film produced by the National Film Board of Canada (Bruck, Lambert and Tucker, in press). After they had seen the movie, the children were asked to tell the story in English or in French to a classmate or to an adult who had not seen it. We recorded and later analyzed these stories with a view toward examining the form and content (e.g., the use of introductions, the number of episodes or details, the number of inferences, the number of mistakes, self corrections, false starts, elaboration) of the stories. We were interested in the children's ability to communicate accurately in their two languages and in whether the children commanded and used appropriately different speech registers. This last question was prompted by the fact that most of the Experimental children have only had contact with French

speaking adults--their teachers--and virtually none with French-speaking peers. The results from this as yet unreplicated experiment suggest that the Experimental children are able to communicate accurately in French the content of the story, but that they do not control the same range of styles as the native speaker. The implications of this finding are not clear; but I believe that it would be valuable to begin to probe the latitude of "acceptability" of second language speakers' utterances which vary along a grammaticality-deviance dimension or along a dimension of appropriate vs. inappropriate register usage.

Finally, we have extended (Bruck, Lambert and Tucker, 1974) our examination of the Experimental children's communicative skills to a new type of situation, one in which they were called upon to interact with French Canadian peers as partners in an informal debate. We were particularly interested in studying the children in face to face contact with French peers because the structure of their own social and school communities seems to provide relatively few opportunities for youngsters from the two groups to get together. We wondered how they would react to each other. Would the Experimental children, for example, feel sensitive about the fact that they tend to make certain grammatical errors and have trouble with gender? Would the FC children make fun of them or would they, in turn, feel sensitive about their distinctive dialect of French? Most important, would the Experimental children relax sufficiently to get caught up in the excitement of the discussions and try to express their own ideas spontaneously?

We were also asking the very basic question: Are the Experimental children functionally bilingual outside of the classroom at least to the extent of being able to talk about topics unrelated to their school experiences to persons other than teachers or experimenters?

At the expense of experimental rigor we created a relaxed atmosphere by bringing the children together in the local recreation center and providing them with soft drinks. The session was coordinated by French speaking undergraduates.

We invited eight randomly selected children from the grade seven Experimental Class and eight randomly selected children from a grade six class in the local French school. We were unable to use grade seven children from the original French Control classes since they had dispersed at the end of grade six into several different junior high schools.

The entire session was tape recorded. Certain unforeseen technical difficulties arose. The patterns of interaction among the 16 children were unpredictable at times and as a result it was difficult to capture, in full detail, spontaneous comments by children who happened to be seated at a distance from one of the four available microphones. We did, however, have the children change places whenever a new topic came up for discussion so a full range of speakers is represented. The children themselves selected the topics.

We have not attempted to carry out any objective linguistic analysis of the taped discussions. The overall impression is that of a lively gathering of youngsters who quickly forgot about the presence of tape recorders and became preoccupied with a naturally paced exchange of ideas. The Experimental children appeared to have no difficulty in communicating and were not inhibited by their non-native phonology and syntax. Individual differences among the children in ability to handle language were apparent. Some were more voluble than others, but talkative children as well as rather laconic ones were found in both groups.

On the basis of these data we feel satisfied that the Experimental children have demonstrated their ability to communicate about a variety of topics completely unrelated to their school curriculum with ease and apparent enjoyment. They were well received by their French Canadian peers who at the end of the debate were asked to provide some subjective ratings of the anglophones' French language skills. The two 9-point scales used were: (a) easy to understand vs. difficult to understand and (b) pleasant to listen to vs. unpleasant to listen to. The mean rating for scale (a) was 3.1, indicating that the francophone children experienced only negligible difficulty in understanding the anglophones. A mean rating of 3.5 was given for scale (b) suggesting that the Experimental children's style of French (their English accent was commented on by several raters) is relatively pleasing to the French children's ear.

While our appraisal of the children's performance on this occasion is undeniably subjective, the original tapes are available to interested researchers or educators as a demonstration that this program of bilingual instruction has indeed produced functionally bilingual children.

It is important to note that I have focused here on the results of studies designed to examine the French speaking skills of bilingually educated anglophone children. In our own research, we also examined the development of English speaking skills from grades one-five, but we consistently found that the Experimental pupils performed similarly to the English educated youngsters (Lambert and Tucker, 1972; Lambert, Tucker and d'Anglejan, 1973), so I have chosen not to describe that research.

The general conclusions to be drawn from these reports would seem to be: (a) That the native-language speaking skills of anglophone pupils participating in French-English bilingual programs are not adversely affected; (b) That the pupils' oral performance in their second language, although good, remains distinguishable from that of native speakers although it is acceptable to them; (c) That the examination of speaking skills remains a relatively unexplored area--one which could benefit immensely from increased collaboration between evaluators and linguists. This collaboration could easily serve both practical and theoretical ends.

Bilingual Education in Canada: In Perspective

The preceding brief and selective review of Canadian research on the effects of innovative approaches to second language teaching provides an overview of the types of evaluation strategies that have been used and of the results obtained to date. There are a number of issues with which I have not yet dealt, but which strike me as important.

Does the child's age of entry into a bilingual program (or the number of years of his participation) affect his ultimate mastery of the second language? In addition to the extremely popular "early immersion" programs which I have discussed, other options exist for many parents. These involve several years of English instruction with "traditional" FSL, followed by a year of immersion (e.g., at grades four, seven or eight) in the target language, followed by a bilingual secondary school program in which the student continues to study French Language Arts, English Language Arts, selected content subjects in English and selected content subjects in French. A number of empirical studies have been and are currently being conducted to assess the consequences of participation in such programs (Barik and Swain, in press; Bruck, Lambert and Tucker, 1976; Cziko, 1975; Edwards and Smyth, 1976; Swain, 1974). In general, the techniques (with appropriate modifications to account for pupils' age) described earlier have been used to assess pupils' progress. The results suggest that the programs do not harm the children's native language development and that participants develop an ability to speak, read, write and understand French which far surpasses that of students following a "traditional" second language approach. Unfortunately, it has not been possible to compare directly the relative standing of children who have followed the early or the late immersion programs because the original cohorts of "early immersion" pupils have not yet completed their schooling. The first such comparison will be possible in the spring of 1977.

I am not aware of any Canadian studies which empirically relate factors such as number of years of participation, class size, teacher's ethnic origin, teacher's language proficiency or type of training, or demographic variables (residence in linguistically homogeneous or heterogeneous communities) to the pupils' acquisition of language skills. Furthermore, the teacher is typically the only native target-language speaker in the Canadian experiments, so potentially important issues such as the relative importance of teacher vs. peer group influence or the optimal balance between native and target language speakers in a classroom have not been empirically investigated. Each of these topics constitute areas for potential investigation.

A number of researchers have questioned the relevance of the St. Lambert experience for U.S. educators (Ervin-Tripp, 1970). Genesee (1976) has reviewed all Canadian studies conducted to date which examine the relationships between intelligence,

socio-economic status, the existence of language or learning disabilities, minority-group membership, or geographic setting and pupils' progress in various French immersion programs. He concludes that:

...level of I.Q. is not an impediment to achievement in French immersion programs any more than it is in a regular academic program in the native language.... The evidence pertaining to working class children in French immersion similarly suggests that these children benefit from French immersion in the area of French language acquisition and do not suffer any negative effects to native language competency. Similar conclusions are suggested by preliminary data on language disabled children.

Thus, in the Canadian setting it seems reasonable to conclude that an innovative approach to second language teaching in which the target language is used as the sole or major medium of classroom communication facilitates second language acquisition without causing detrimental effects on native language development.

BILINGUAL EDUCATION IN THE UNITED STATES: THE REDWOOD CITY EXPERIMENT

In the preceding section, I attempted to provide an overview of recent Canadian-based evaluations of bilingual education programs by focusing on our own work in the St. Lambert community. Now I would like to consider the results of research conducted in a very different sociolinguistic setting--the American southwest. Since today there are at least 411 federally funded bilingual education projects (Alatis and Twadell, 1976) and undoubtedly countless other state or locally funded projects, the choice of a program for consideration was extremely difficult. I have chosen to focus on the Redwood City, California, Bilingual Education Project (Cohen, 1975; Cohen, Fathman and Merino, 1976). The program, intended mainly for Mexican-American children, provides an interesting complement to the St. Lambert project. In contrast to many American programs, this project has been the object of critical, careful and continual *empirical* evaluation since its inception in the fall of 1969 (compare, for example, the evaluation reports prepared by Educational Management Services, 1974-75 to assess the bilingual programs in the Chicago area).

The project was established for the children of Mexican-American families living in a particular area of Redwood City and also, at least implicitly, to serve as a model for future educational projects in the area. For evaluation purposes, a Bilingual group and a Comparison (or traditionally educated) group were identified. The participants resided in neighborhoods which had the highest concentrations of Spanish-surnamed heads of

households in the city. The Mexican-Americans, as a subgroup, were of considerably lower socio-economic status than members of other ethnic groups in their neighborhoods.

The project was initiated in the fall of 1969 with one first grade class--either the Pilot Bilingual group or the Pilot Comparison group in each of two schools. The next year, a second first grade class (Follow-up I) and a kindergarten group (Follow-up II) were added to the project, and a longitudinal evaluation project was launched which, to date, has assessed the progress of participants over a four-year period. The research has examined the effects of bilingual schooling upon the children's native and second language learning, upon their patterns of language-use, upon their performance in a content subject such as mathematics, upon their academic aptitude, upon their attitudes toward the Mexican and Anglo cultures and upon their attitudes toward school.

As Cohen, Fathman and Merino (1976) have noted, the "treatment" for the Bilingual group varied from year to year and from grade to grade. However, they claim that certain constant methodological approaches were used throughout. Generally, the students in the Bilingual group, of whom approximately two-thirds were Mexican-American and one-third Anglo, were schooled in a setting where aides and teachers used both languages, Spanish and English, freely and interchangeably. Content subjects such as mathematics, science and social studies were introduced bilingually. Although the intention had been to introduce Spanish reading before English reading, the two were apparently introduced almost simultaneously--a phenomenon reportedly observed in many other American bilingual programs (Cohen and Laosa, 1976).

A Comparison group (also approximately two-thirds Mexican-American and one-third Anglo) for each of the Bilingual classes was identified at a nearby school. The children in the Comparison group received their instruction exclusively in English. In addition, many of the children received special ESL training.

The general pattern of results for the Mexican-American children can be summarized as follows: (a) The Bilingual group surpassed the Comparison group in Spanish reading, while the converse was true for English reading; (b) The Bilingual group surpassed the Comparison group in Spanish vocabulary and oral production, while the converse was again generally true for English vocabulary and oral production; (c) The results for mathematics were mixed; (d) The members of the Bilingual group reported that they used more Spanish than the Comparison group. Let us now look, in slightly more detail, at the evaluation of the separate skills.

The Assessment of Listening Skills

Listening comprehension tests were developed and administered to the Pilot, Follow-up I and Follow-up II Bilingual and Comparison groups as they progressed from kindergarten to grade three (Cohen, 1975A). Listening skill in Spanish was assessed

using a researcher-made test adapted from the Comprehension Oral, Serie Interamericano and the Prueba de Lectura, Serie Interamericano. The test consisted of 45 statements such as "which kitten is following its mother? Put an x on the cat that is following its mother"--each of which was accompanied by four pictures. The child had to choose the one picture on each trial which matched the utterance. During the latter part of the test the child had to respond to short stories rather than to single sentences.

Listening skill in English was assessed using a parallel form of the Spanish test which the author adapted from the Inter-American Oral Comprehension Test and Reading Test. All children were tested first in English, then in Spanish two-to-three weeks later. In general, Bilingual pupils performed similarly to the Comparison pupils on both the Spanish and the English listening comprehension tests. There was one instance in a total of six testings where the Bilingual group actually performed significantly better than the Comparison group on the English test (a finding also reported by Goodman and Stern, 1971). These results clearly indicate that the experimental program did not detrimentally affect the listening skills of the bilingually instructed pupils. Tests of listening comprehension were apparently not administered in later years (see Cohen, Fathman and Merino, 1976).

The Assessment of Reading Skills

At the early primary levels, kindergarten through grade three, Spanish reading skills were assessed using various forms of the Prueba de Lectura, Serie Interamericano which have subtests such as vocabulary, comprehension and speed of comprehension (Cohen, 1975A). To assess English reading skills, the children were given, at various times, the Murphy-Durrell Reading Readiness Analysis, the Inter-American Tests of Reading, Levels 1 and 2 and the Cooperative Primary Tests of Reading.

With regard to Spanish reading, the Bilingual Pilot group at grade three, after three years of bilingual instruction, performed significantly better than the comparison group on the comprehension subtest and on the total score of the Prueba de Lectura. There were no other significant differences for this or for either of the other two groups. With regard to English reading skills the first Follow-up Bilingual group performed significantly less well than the Comparison group on the Cooperative Primary Test, but no differently on the Inter-American test. There were no other significant differences.

At the later primary levels, grades four and five, Spanish reading skills were evaluated using the Prueba de Lectura while the Inter-American Tests were used for English (Cohen, Fathman and Merino, 1976). The results from the testing at these grade levels were less encouraging. The Comparison group at the Follow-up I and Follow-up II levels performed significantly

better than the Bilingual group on the test of English reading. The authors report "these findings suggest that reading taught bilingually may not facilitate reading in English; that instead, children who learn to read first and exclusively in English appear to do better in English reading over time." They do, however, caution that teacher differences, methodology differences and the extremely small sample size may have combined to produce these results artifactually. Furthermore, it is difficult to interpret these findings clearly since we don't know from the information presented whether the Bilingual group's *relatively* poor scores indicated that they were performing substantially below grade level. It is also important to add here that Inclán (1971) reported that Cuban Bilingual students from grades three to eight performed as well as comparable Comparison students although they were admittedly of higher socio-economic status than Cohen's sample.

With regard to Spanish reading, the Pilot Bilingual group scored significantly better than the Comparison group at the grade five level. The other comparisons were not significant. The relatively strong performance by the Comparison Follow-up I and II pupils in Spanish reading despite the fact that they had no formal Spanish instruction seems to support the claims made by Lambert and Tucker (1972) and by Swain (1974) for positive transfer from a non-native language of instruction back to the mother tongue. That is, once the mechanics of decoding have been learned, they can seemingly be applied with relative ease to another code--even when the orthographies are as dissimilar as Hebrew and English (Genesee, Sheiner, Tucker and Lambert, 1976). Thus, it would seem in retrospect that we still cannot make any definitive policy recommendations concerning the optimal sequencing of languages for purposes of early literacy training.

The Assessment of Writing Skills

The writing ability of the Pilot pupils at the end of grade three was evaluated by asking them to write, on one occasion in English and two weeks later in Spanish, a story suggested by a sequence of 12 pictures. The compositions were scored along a series of seven dimensions. Five of these involved various objective counts--verbal output, range of vocabulary, diversity of vocabulary, accuracy of spelling, grammatical correctness--while the other two involved subjective estimates using 5-point rating scales--quality of sentence structure and effectiveness of expression. These measures are similar to those used by Lambert and Tucker (1972) and by Genesee (1974).

The English compositions of the Bilingual and Comparison groups were found to be similar on six of the seven dimensions. They differed only with respect to spelling accuracy where the Bilingual pupils made significantly more errors than the Comparison group.

The Spanish compositions of the Bilingual and Comparison groups were equivalent on five of the seven dimensions. The Comparison pupils made significantly more spelling errors than the Bilingual pupils, but they used a more diverse range of vocabulary in their compositions. These findings must be interpreted cautiously since the sample size was extremely small and the results were not replicated with the Follow-up groups.

No evaluation was conducted of writing skills at other grades. This seems like a relatively incomplete and dissatisfying assessment of this aspect of the children's language development--a situation not unique to the present evaluation.

The Assessment of Speaking Skills

At the early primary grades, the Spanish speaking skills of the children were evaluated by using a test of vocabulary production or word naming by domain, and by a story telling task. In the word naming task (Fishman, Cooper, Ma et al, 1971), the child was given 45 seconds to name as many Spanish words as he could for objects found in the kitchen, the school, the street and the church. In the story telling task (Darley, 1968), the child was asked to tell stories about a series of three pictures. These were tape recorded and later rated by a judge using a series of 5-point rating scales to assess general fluency, grammar, pronunciation, intonation, language alternation and descriptive ability. For English, the same word naming task and story telling task were used. The order of administration of the Spanish and English versions was randomly arranged.

For the Pilot pupils, there was no difference between the Bilingual and the Comparison group on any scale for the English or the Spanish story telling or word naming tasks. The same general pattern held also for the Follow-up I pupils although the Bilingual group was rated significantly more favorably than the Comparison group on the grammar and descriptive scales of the Spanish story telling task while the Comparison group produced more words on the kitchen and the "total" portions of the word naming task. For the Follow-up II pupils, the Comparison group had a rather extensive advantage over the Bilingual pupils in English story telling and on word naming. They differed significantly on descriptive ability, communicative ability and pronunciation and with regard to the domains of church and school. There were no such differences at this level for any of the items on the Spanish speaking test.

These apparently discouraging findings should be tempered a bit by the results from a Language Use Inventory administered both at the early and at the late primary levels. At the early primary levels, the Bilingual pupils reported using Spanish more often than English and more often than the Comparison pupils. The data from the later report support this trend. Thus, it does appear as though the bilingual program in Redwood City contributed to the maintenance of the Spanish language by

encouraging its use. Ramirez and Politzer (1975) also report that pupils' achievement in English appears to be unrelated to the maintenance of Spanish--that is, an enhancement of English ability will not necessarily be accompanied by a decline in Spanish skills.

It is clear, however, that this particular bilingual experience enhanced neither the English language acquisition nor the content subject mastery of the participating pupils (see Table 7 in Cohen, Fathman and Merino, 1976). The authors conclude their report with the reminder that "we should look more carefully at particular bilingual education methodologies," and draw our attention to the article by Cohen and Laosa (1975) in which the authors "stress the importance of looking more closely at the specific educational treatments..., at the characteristics of the students in the samples investigated, at the contexts in which the program took place, at the research design and methods...employed, and at the subtle interaction of treatments, student characteristics, context, and research design."

It should be mentioned at this point that in addition to assessing the children's oral skills by asking a group of judges to evaluate taped recordings using a series of semantic-differential rating scales, Cohen (1975A) also examined and described the grammatical deviations produced by the children from the Bilingual and from the Comparison groups (Spilka, 1976). He found, for example, in his comparative analysis that the English of the students in the Bilingual group did not approximate "school" English so closely as that of the Comparison students. He attributed deviations in the English or Spanish of the pupils to language interference, to developmental sources or to interference from a nonstandard variety. He noted, if anything, an *increase* for both groups over time of deviant forms in their English which could be attributed to interference from Spanish. This section of Cohen's report provides particularly useful formative data.

Other researchers have also utilized oral-production data collected from bilingual program participants to study the acquisition of native and second language grammar and to investigate the hypothesis that native and second language acquisition constitute analogous processes (Boyd, 1975; Chun and Politzer, 1975; Cohen, 1976; Cohen and Robbins, 1976), however, it should be remembered that we have to date very little information about the nature of the input data received by children in bilingual programs. I believe that the potential uses of such data have not yet been fully exploited and will prove to serve both practical and theoretical purposes in the future.

Bilingual Education in the United States: In Perspective

I do not claim to have reviewed exhaustively the extensive documentation, mostly unpublished, concerning the evaluation of U.S. bilingual programs. Rather, I have attempted to select and look in some detail at one study which, I believe, exemplifies the type of careful, critical and longitudinal evaluation that

should accompany innovative or model programs. There are a number of recent reviews that do attempt to survey more broadly the findings from a number of U.S. programs (see, Cohen, 1975A; Cohen and Laosa, 1976; Engle, 1975; Paulston, 1974, 1975), while the report by Shore (1974) provides a very broad overview of the structure and evaluation of 125 Title VII projects. In addition, Cohen and Swain (1976) consider the Canadian and U.S. bilingual education experiences, and examine the implications of the Canadian "immersion" model for American educators. They conclude essentially that there are numerous approaches to developing bilinguality and that no one technique can be viewed as a panacea for all sociolinguistic settings.

Do the data from Cohen's work which I have reviewed or those from other studies to which I have explicitly or implicitly alluded allow us at this time to draw valid inferences concerning the effects of bilingual programs on the linguistic development of the participants? My belief is that they do not. The data reviewed to date do not permit us to conclude categorically that children introduced to schooling bilingually or in their vernacular language will ultimately develop greater academic, cognitive or linguistic proficiency than those children who are introduced to schooling exclusively via the second language (provided that they remain in school for comparable periods of time). This statement should not, in any way, be interpreted to imply that programs of bilingual education are undesirable or that they may not, over the long run, enhance the child's academic or social development. I shall return to these issues in the concluding section.

BILINGUAL EDUCATION IN THE PHILIPPINES: THE RIZAL EXPERIMENT

Let me turn now to an experiment conducted in a very different sociolinguistic setting--in the Philippines, a multilingual country in Southeast Asia. The Republic of the Philippines comprises a chain of approximately 7,000 islands stretching from close to Taiwan in the north to Borneo in the south. The "official" languages are Pilipino (Tagalog), English and Spanish. There are, however, at least 75, and perhaps as many as 150, mutually unintelligible languages although many of them are spoken by relatively few people. One or more of eight major vernacular languages are spoken by approximately 90 percent of the population of 42,000,000.

For many years, English was the sole medium of instruction in school although Pilipino has been studied as a subject since 1940. In 1957, however, as a result, in part, of a study conducted in the province of Iloilo (see Ramos, Aguillar and Sibayan, 1967), a decision was made to use the prevailing local vernacular as the medium of instruction in grades one and two with a shift to English as the major medium in grade three (Fafunwa et al, Yoruba then English in Nigeria, 1974; Modiano, vernacular then Spanish in Mexico, 1973; de Ronceray and

Petit-Frère, Créole then French in Haiti, 1975). Following this approach initial instruction and initial reading activities would occur in the child's mother tongue. Oral ESL activities began in grade one followed by English reading-readiness activities in grade two. A careful, critical and longitudinal follow-up experiment was conducted several years later in Rizal province (Davis, 1967) to replicate and extend through six grades the findings of the original experiment and to try to determine empirically the most appropriate time to introduce reading in English. The performance of the children was re-evaluated at the end of their second year of high school (Revil et al, 1968) so that it is possible to draw a series of rather comprehensive conclusions about the efficacy of this type of educational program.

The Rizal Experiment examined two main questions. The first was designed to provide information that would help Filipino educators to decide when reading activities should be introduced in the teaching of ESL in Tagalog-speaking areas. The second was designed to yield information that would be helpful in deciding when English should be introduced as the medium of classroom instruction. The performance of five groups of pupils was examined. The groups varied according to the grade level at which reading in English and instruction in English was introduced. Thus,

Design of the Rizal Experiment

<u>Grade English-medium Instruction began</u>	<u>Grade English reading began</u>	
	<u>1</u>	<u>2</u>
1	Group 1	
	Group 2	Group 4
	Group 3	Group 5

pupils in Group One began their schooling in English and were introduced to English reading immediately at that grade. They did, however, have one period per day devoted to Tagalog Language Arts. The pupils in Groups two and three began their schooling in Tagalog, but were introduced to ESL with accompanying English reading activities in grade one. The pupils in Groups four and five likewise began their schooling in Tagalog. They were introduced to oral ESL activities in grade one but English reading activities were postponed until grade two. Groups two and four made the transition from Tagalog-medium to English-medium instruction at grade three; Groups three and five made the transition at grade five. Each of the five groups comprised six classes of 50 pupils each. Insofar as was possible, factors such as teacher education and experience, school facilities and community socio-economic characteristics were equated. The Tagalog Picture Vocabulary Test was administered as a pretest and criterion variable data were later adjusted using analysis of covariance techniques.

Tests of English Proficiency were administered to pupils in the spring of grades one, two and three. The components of the English Proficiency Test were as follows:

Part	Skill Tests	Items
1	Listening Comprehension	30
2	Oral Expression	
	Translation (Tagalog to English)	15
	Language Patterns	15
3	Reading Comprehension	30
4	Written Expression	
	Spelling	10
	Language Patterns	10
		<u>110</u>

Four forms of the tests were derived, standardized and normed by staff members of the Philippine Center for Language Study.

Implications of Varying the Level at Which English Reading Was Begun

The first general question was examined by asking whether Tagalog-speaking pupils taught ESL in grades one, two and three would be more proficient in English at the end of grade three if English reading activities (as distinct from oral-aural activities) were introduced in September of grade one (Groups two and three) or of grade two (Groups four and five). The results of a series of analyses of covariance led to the conclusions, with which I concur, that:

...if anything, pupils are more proficient in oral expression at the end of grade 3 if the teaching of English as a second language is *not* limited to aural-oral activities during grade 1. However, the differences shown in Table 9 are of so little practical consequence and are so inconsistent in direction that our major conclusion is that it makes little practical difference whether the introduction of reading activities in the teaching of English occurs in September of grade 1 or grade 2 under the circumstances existing in Rizal Province in 1960-1963. (Davis, 1967)

Davis goes on to say that most of the variance was attributable to using English, rather than Tagalog as the medium of instruction in grade three. He also discussed the possible role played by various factors such as materials, teaching procedure and motivation level in the outcome.

The general findings that the grade level at which reading in English was introduced, and that the sequencing of vernacular and second language reading apparently made no difference in

pupils' performance on an English language reading test was recently replicated in Canada by Cziko (1976), who examined the introduction of instruction and sequencing of reading in English and French for anglophone youngsters.

It should be made clear that the apparent discrepancy among results such as those obtained by Davis and Cziko and those reported by Gudschinsky (1971) or Modiano (1968) may be attributable to a number of factors which lie beyond the scope of experimental control. Thus, factors such as the existence of a vernacular literary tradition, the encouragement of mother tongue literacy by parents and by the community, the similarity of orthographic representations and the structural similarity of the two languages may all affect the development of literacy skills and the optimal sequencing of literacy training. In the Philippines, for example, despite the fact that English remains an important and widely used link language, there is a Tagalog literary tradition encouraged by parents and society and supported by the existence of abundant attractively produced children's reading materials. Such a tradition does not exist for the majority of Indian languages in Canada, the U.S. or Latin America or even for an important world language like Arabic. Hence the data from well-controlled studies like those of Davis and Cziko need not preclude the introduction of initial literacy training in the vernacular.

Implications of Varying the Level at Which English Instruction Was Begun

The Second General question was examined by asking whether the English-language proficiency and the Tagalog-language proficiency of Tagalog-speaking pupils all of whom studied ESL taught in English since grade one (Group one), grade three (Group two), or entirely via Tagalog (Group three) would vary at the end of grade four.

For the grade four assessment, the following tests were prepared by the Bureau of Public Schools:

<u>English Language Test</u>	<u>Items</u>
Part 1: Diction	50
Part 2: Sentence writing	70
Part 3: Sentence writing	10
Part 4: Dictation	10
<u>English Reading Test</u>	
Part 1: Vocabulary	40
Part 2: Paragraph comprehension	20
<u>Tagalog Reading Test</u>	
Part 1: Vocabulary	30
Part 2: Sentence writing	20

The results of the testing conducted at the end of grade four were clear cut. On the English language test and on the English reading test, the pupils from Group one scored higher than those from

Group two followed by those from Group three. All differences were significant. There were, however, no such differences among the groups on the Tagalog reading test.

This same question was posed at the end of grade six when the performance of pupils from Group one (English medium throughout), Group two (English medium since grade three), and Group three (English medium through grade five) was assessed using the following tests prepared by the Bureau of Public Schools:

<u>English Proficiency Test; Form E</u>		<u>Items</u>
Part 1: Listening comprehension		12
Part 2: Reading comprehension		40
Part 3: Mechanics of English		76
Part 4: Oral expression		20
<u>English Language Test</u>		
Part 1: Usage		50
Part 2: Spelling		15
Part 3: Capitalization and punctuation		15
<u>English Reading Test</u>		
Part 1: Vocabulary		30
Part 2: Paragraph comprehension		10
Part 3: Sentence writing		20
<u>Tagalog Reading Test</u>		
Part 1: Vocabulary		30
Part 2: Paragraph comprehension		10
Part 3: Sentence comprehension		20

For the purposes of the experiment, data from the four parts of the English Proficiency Test constituted separate criterion variables while total scores were used as the criteria for the English language, English reading and Tagalog language tests. Thus, seven analyses were performed. The results indicated that large and statistically significant differences occurred among Groups one, two and three for each of the six English tests. Proficiency in English was directly related to the number of years that English had been the medium of classroom instruction. Furthermore, there was no significant difference among the groups on the Tagalog reading test. These pupils, then, became equally literate in their vernacular (Tagalog) regardless of the language used as the medium for classroom instruction. I should also add (although it is not the focus of this paper) that the pupils who had received English medium instruction from grades one to six performed significantly better on subject-matter tests than the pupils instructed for varying amounts of time in Tagalog, regardless of the language of testing (English, Tagalog, bilingual).

The pupils' performance was re-evaluated at the end of their second year of high school. Revil et al (1968) devised as MA theses at the Language Study Center of the Philippine Normal College, a series of tests to assess English proficiency, Tagalog proficiency and content-subject mastery. They were able to test

64 percent of the original sample of 1500 pupils. Once again, the results indicated that English proficiency was directly related to the number of years English had been used as the medium of instruction. Likewise, the group schooled exclusively in English performed best in all content areas--including, on this occasion, a test of Pilipino grammar and literature!

Davis (1967) concluded on the basis of this study "that any change in the number of years in which English is used as the medium of instruction will affect the facility and effectiveness with which the pupils can profit from instruction in English in secondary schools and colleges"; and furthermore that "the average level of literacy in Tagalog is not closely related to the number of years in which it has been used as a medium of classroom instruction."

Bilingual Education in the Philippines: In Perspective

The program of research in the Philippines strikes me as important for a number of reasons. First, I believe the study to be a meticulously conducted exemplary investigation which should serve as a useful reference tool or model for researchers working in this area.

There remain, of course, a number of limitations to the Philippine research--most of which are pointedly described by Davis. These concern the possibility that teacher, material or even selection factors may have affected the outcome. Nevertheless the project directors seem to have done the utmost to minimize such effects. I do not know of any critical, longitudinal bilingual education research conducted in any developing country which systematically and successfully manipulates or controls independent variables such as social class, urban vs. rural environment, intellectual potential, or teacher expectations--factors which we, in North America, consider to be vitally important.

Secondly, subsequent events in the Philippines bring sharply into focus the role of language in education and call attention to the complex array of factors which may affect the determination of a country's language policy. The results of the Rizal Experiment notwithstanding, the National Board of Education of the Philippines decreed in 1973 that "English and Pilipino serve as media of instruction and be taught as subjects in the curriculum from grade one to the university level...." I believe that the Philippine experience should be borne in mind as we try to understand language decisions being undertaken in other developing countries. I shall return to this point in the concluding section.

Thirdly, I believe that the results of the Philippine experiments do hold important implications for U.S.-based bilingual programs designed for minority-group Americans--a topic to which I shall also return.

DIRECTIONS FOR FUTURE RESEARCH

I have tried in this paper to examine carefully a small number of research studies and to draw inferences about the effects of bilingual education programs on the native and second language development of participating youngsters. This brief examination has revealed a number of serious lacunae in the research conducted to date. It goes without saying that methodological difficulties plague attempts to conduct rigorous empirical research in the community (Campbell, 1969). In fact, the danger exists that an emphasis on summative as opposed to formative evaluation may paralyze the curricular or methodological flexibility that seems to characterize many successful teachers or programs (Politzer and Weiss, 1969). It is the case that many community-based or church-based bilingual programs have existed and thrived for years despite (or because of) the absence of formal evaluation (see for example, Andersson and Boyer, 1969). Nevertheless, I do reiterate the position taken earlier: That the notion of an innovative approach to education implies, even necessitates, a comparison of the new program with an alternative approach. And there certainly do exist useful research models for future investigators (Cohen and Laosa, 1976).

The changing views of linguists concerning the process of native language acquisition and the relationship between native and second language learning have provided a measure of theoretical justification for the move to bilingual education--the rationale being that a student can more effectively acquire a language when its learning becomes incidental to the task of communicating with someone about an inherently interesting topic. However, there do exist obvious limitations to the application of data or insights from recent second-language acquisition studies to the classroom (see Tarone, Swain and Fathman, 1976). This research continues, and it is not inconceivable that more direct and immediate pedagogical implications will some day emerge.

As I mentioned earlier, I believe that serious and immediate attention should be given to the task of defining, publicizing and implementing locally appropriate goals for bilingual education programs. Until this has been done, it remains very difficult to assess validly the efficacy of the programs. An even more serious question continues to plague evaluators: How does one validly assess language proficiency? What does it mean to know and to be able to communicate efficiently and acceptably in a language? I earlier suggested that we may not yet have developed tools to assess adequately or validly an individual's level of language proficiency. In particular, I called attention to the importance of conducting longitudinal "tracer" studies (see Fafunwa et al, 1974) to determine the probability that a pupil who follows a particular program of instruction will actually go out into the community and function comfortably using the target language.

This suggestion implies that we must not only develop a battery of locally appropriate, valid testing instruments, but that we must also initiate research to examine the acceptability of various deviant speech and writing styles to prospective employers or other potential "superiors" (Cooper, 1974, 1975; Rémillard, Tucker and Bruck, 1973). Thus, it would seem appropriate to launch an extensive research program designed to operationalize and examine the criterial attributes of what Savignon (1972) refers to as "communicative competence" for each of the four language skills, and to examine the reactions of diverse members of society in various specified settings to second language learners who possess such "competence" but who are readily distinguished from native speakers. The results of such research could be extremely interesting. For example, Gatlinton-Segalowitz (1975) has demonstrated empirically that under certain circumstances francophones will choose, as their representatives to an English language conference, individuals whose speech is marked by pervasive lexical, phonological and syntactic interference in contrast to balanced bilinguals.

Simultaneously, researchers should continue their efforts to develop locally appropriate (whether norm-referenced, criterion-referenced or informal), valid testing instruments. With respect to the evaluation of listening skills, I would like to see additional work done to develop the use of "informal" but potentially meaningful techniques to assess skills such as a pupil's ability to understand a radio broadcast, his teacher's class presentations or his homework assignment. It is not clear to me that the results obtained with such techniques would necessarily correlate positively with present standardized discrete-point listening comprehension tests. I also believe that the "cloze" procedure for assessing listening comprehension suggested by Bowen (1972) should be further investigated.

With respect to the assessment of reading skills, I think that additional research needs to be done with integrative measures such as the cloze procedures. We have found this to be a very powerful discriminator among students with varying abilities. Conversely, I believe that traditional letter and word recognition or discrimination measures are absolutely irrelevant for purposes of summative evaluation beyond the very elementary level. I suggest that techniques be developed to assess functional skills such as the ability to read a newspaper; various types of directions, or technical manuals.

The assessment of writing skills represents a relatively neglected area in the bilingual education research literature. Clearly, it is necessary to go beyond the stage of asking teachers to evaluate pupils' compositions using a series of 5-point rating scales. It should be possible to focus on both the form and the content of writing samples. This would seem to be an area for the application of the techniques of error analysis (Scott and Tucker, 1974; Taylor, 1975) or of the techniques developed by researchers such as Hunt (1965) to assess the

development of native language writing skills. Furthermore, serious thought should be given to exploring the relevance and application of Kaplan's (1972) work concerning the development of a pupil's ability to understand and to express ideas in a contrasting rhetorical system. I know of no research which has even begun to tap this potentially rich research domain.

The assessment of speaking skills also represents a potentially rich area for continued and expanded research. Once again, it is clearly necessary to go beyond the stage of asking teachers or even linguists to evaluate taped recordings using a series of 5-point rating scales. Researchers are now beginning to develop and to use other analytic tools and to compare their relative effectiveness (LoCoco, 1976A; Spolsky et al, 1972). In addition, investigators have begun to examine whether participation in bilingual programs leads to the development of a stable and evolving system of interlanguages (Selinker, Swain and Dumas, 1975; Hamayan et al, 1976)--a question of enormous theoretical interest. Relatively little attention has been devoted to code-shifting within or because of bilingual programs (however, see Bruck, Lambert and Tucker, 1974; Gumperz and Hernandez, 1972; Shultz, 1975) although recent work in child native language acquisition has spurred interest in this topic. Furthermore, the control of diverse appropriate language styles has implications for the subjective-reaction research suggested previously. Lastly, Spilka (1976) has suggested that the oral skills of the children participating in the St. Lambert program may actually regress relative to those of native speaker comparison pupils during the course of their participation in the program. She reports that they more closely approximate native speakers in the early grades than in the later grades. This phenomenon merits examination. Do the children's skills really regress over time? If so, what social, environmental or pedagogical factors motivate this apparent failure to progress?

From a more global perspective, additional research is needed to examine the effects of factors such as intellectual potential, social status, physical or emotional development, age of entry, presence of native speakers, community stereotypes, teacher characteristics, classroom techniques, sequencing of languages, and social setting on the desirability and efficacy of bilingual educational programs. In addition, serious thought must be given to exploring alternative or more sophisticated data processing techniques (for example, see the use of factor analysis, Cziko, 1975; and multivariate analysis, Linton, in press; Tucker, Hamayan and Genesee, 1976).

INTEGRATIVE SUMMARY

For a number of years, many educators have accepted as axiomatic the idea that the best medium of instruction for a child is his mother tongue (Saville and Troike, 1971; UNESCO, 1953), and that literacy training should first be provided in

the mother tongue. The argument continues that the use of the mother tongue will enhance the development of pride, self-esteem and cultural awareness and that its use may well facilitate cognitive development or other readiness skills that will result in increased content subject mastery. The movement to bilingual education for minority-group students in the United States and to vernacular education in developing countries would seem to be consistent with this general position.

Are there empirical data which unequivocally support this position? The answer would seem to be *no*. Does this mean that the position is untenable? Once again, the answer would seem to be *no*. Let us suppose for the sake of argument that the goal of an educational system is to develop children who are proficient in all aspects of their second language (e.g., English for Mexican-Americans; French for English Canadians, English for Filipinos); who have a thorough mastery of academic subjects such as mathematics, science and social studies; and who are literate in their mother tongue.

The Canadian data which I have reviewed (Lambert and Tucker, 1972; Lambert, Tucker and d'Anglejan, 1973; Bruck, Lambert and Tucker, 1974; Bruck, Lambert and Tucker, in press) suggest that English Canadian youngsters immersed in French and later bridged into a French-English bilingual program will achieve these goals. The Filipino data (Davis, 1967; Revil et al, 1968) suggest that Filipino children immersed in English with Tagalog Language Arts as a subject for study will achieve these goals. Notice, however, that in the Philippine experiments it was never possible to compare the content-subject mastery of "English immersion" students with those educated throughout in Tagalog!

The California data (Cohen, 1975A; Cohen, Fathman and Merino, 1976) suggest that Mexican-American children who are instructed in English perform at least as well as and perhaps better than bilingually instructed peers on measures of English achievement, content mastery and Spanish achievement. However, the bilingually instructed pupils reportedly use Spanish more often in the community (a finding also noted by Laosa, 1975). It must be remembered that data for the California pupils at present extend only to the fifth grade for one very small Pilot class and to grade four for two small Follow-up groups.

What common feature seems to be associated with each of these experimental programs? Achievement in the second language, and achievement in content subjects (which have probably been taught both for comparison and bilingual pupils from books and curricula developed originally in the second language and by teachers trained in the second language) are directly related to the use of the second language as a medium of instruction. Furthermore, the children do develop literacy in their mother tongue. Note, however, that in each setting the parents probably actively encourage and support the development of mother tongue literacy and the children have followed a formal language arts program in English, Spanish or Tagalog at school. This is

certainly true in the Canadian and Philippine experiments and it is possible to infer from Cohen's report also for the Redwood City project. Furthermore it is important to note that the teachers probably held extremely positive expectations concerning the progress of all pupils--Bilingual and Comparison--in the experiments described above.

It does not strike me as at all unreasonable that where positive expectations exist, where community-support exists, where children for whatever reason do remain in school that the goals described earlier are seemingly best achieved with a large concentration of instruction in the target language accompanied by support activities in the mother tongue.

There are many situations, however, where such positive expectations do not exist, where such home or community-based support does not exist, where children for whatever reason do not remain in school beyond grades three or four. In these situations, it would seem perfectly reasonable and well advised to initiate children to formal schooling and to provide initial literacy training in the mother tongue. Thus, the results of research reported by Modiano (1968, 1973) in Mexico; by Skutnabb-Kangas (1975) in Finland; as well as those from diverse studies summarized by Gudschinsky (1971) for Latin America where a higher proportion of children who are introduced to schooling in their vernacular and later bridged into the second language develop literacy in their mother tongue, achieve higher levels of content mastery and second language proficiency and remain longer in school than children who are schooled exclusively in the second language do not seem inconsistent to me.

Furthermore, it does not seem incongruous to me that Haitian (de Ronceray and Petit-Frère, 1975), Nigerian (Fafunwa, et al, 1974) or Filipino educators should, despite longitudinal empirical data to the contrary, adopt programs with increasingly large components of vernacular education. The desire to ensure literacy in the mother tongue, to maximize the value of education for those who will likely not complete their schooling and to enhance national pride and unity probably far overshadow the goal of developing the highest possible level of second language proficiency in a select elite.

What generalizations can be drawn or what recommendations can be made, if any, on the basis of the present review? I believe that the present review together with the others which have been prepared for this series will permit the conclusion that some form of bilingual education program is desirable in any community where there exists a serious and widespread desire or need for a bilingual or multilingual citizenry; and furthermore, that social rather than pedagogical factors will probably condition the optimal sequencing of languages. Thus, in situations where the home language is denigrated by the community at large, where many teachers are not members of the same ethnic group as the pupils and are insensitive to their values and traditions, where there does not exist a pressure within the home to encourage

literacy and language maintenance, and where universal primary education is not a reality it would seem desirable to introduce children to schooling in their vernacular language. For example, the Mexican-American child in many, but not necessarily all communities, the American Indian child and the Canadian Eskimo child would each probably be encouraged to develop to his very fullest potential in such a bilingual program.

Conversely, in settings where the home language is highly valued, where parents do actively encourage literacy and where it is "known" that the children will succeed, it would seem fully appropriate to begin schooling in the second language.

In conclusion, it now seems apparent to me that no uniform recommendation (such as the UNESCO axiom) can be made that will suffice for all pupils. The available empirical data do not permit universal generalizations. Rather, they highlight the fact that the constellation of social and attitudinal variables interact in unique ways in diverse sociolinguistic settings to affect the child's ultimate level of linguistic development.

Viewpoints

viewpoint: Charles A. Ferguson

Linguistic Theory

Tucker's substantial and stimulating paper, in spite of its title, has very little to say about linguistics. He reports on three of the most significant experiments in bilingual education and does so with the special merits of his professional training and experience in language experiments and surveys as well as his personal familiarity with the settings of the three experiments, but his treatment of linguistic aspects of the experiments themselves or bilingual education in general is limited to a few pages at the beginning and some scattered observations. Perhaps that is as it should be, since we must acknowledge that social, political, psychological, economic and other factors must surely outweigh the purely linguistic factors in any analysis of bilingual education efforts and in any actual policy planning for bilingual education. Nevertheless, questions of language structure and language use are at the core of the bilingualism issue and the findings, methods and insights of linguistics, i.e. the scientific study of language for its own sake, will have some kind of "core relevance" in the discussion of bilingual education. Since his paper is labeled a "linguistic review paper" and I have been asked to focus my response on general linguistic theory and research, my comments will be from a linguistic perspective.

The contributions of general linguistic theory and research to the discussion of bilingual education are fourfold: (a) the linguists' approach to the study of language, (b) findings about the nature of human language, (c) psycholinguistic theories of language acquisition and (d) the processes of planned language change. Let us take the first three areas in turn. Discussion of the fourth area is provided in Heath's (1977) paper in this series.

LINGUISTS' APPROACH TO THE STUDY OF LANGUAGE

The implicit assumption of all linguists in carrying on

their professional work is that "language is patterned human behavior subject to systematic, objective analysis (Ferguson, 1966)," and this fundamental approach to the study of language behavior can contribute in important ways to the analysis and planning of bilingual education programs. The mother tongue of any population is assumed to be a complex system of patterned behavior which can be analyzed and described, not random or irrational or perverse behavior "without grammatical rules" as low-valued dialects and languages are sometimes said to be. Discussions about the structure and use of the languages in a bilingual program, including the form of the language to be used in instructional materials and in the classroom, can be based on dispassionate accounts of the languages drawn from observation and linguistic analysis. This is not to say that policy decisions can be made on purely linguistic grounds, since community attitudes and expectations about languages are, in the final analysis, more important than linguists' analyses; it does mean that vague, conflicting, often highly emotional claims about languages can be resolved in part by adopting the linguists' approach, sometimes even in a common sense, nontechnical way. For example, a particular program of English-Spanish bilingual education in the U.S. may run into problems about the kinds of Spanish to be accepted in the classroom and in the written materials used in instruction. Differences in pronunciation, grammatical forms and vocabulary items as between Puerto Rican, Cuban, Mexican-American and other varieties of Spanish may pose problems, and these may be foreseen and dealt with in the spirit of ascertaining the significant language patterns and making decisions based both on the linguistic facts and on the educational values of the community.

Linguists assume that any variety of language, no matter how marginal or despised, or on the other hand no matter how artificial or idealized, is patterned and may be studied in order to extend our knowledge of how human language works. Also, linguists assume, after more than a century of research, that all languages are equal in potential capacity for human communication, that there are no natural mother tongues of speech communities which are "primitive" in the sense of having a structure representing an earlier stage in the evolution of human language or having a vocabulary inadequate for every day communication (Fromkin and Rodman, 1974; Bolinger, 1975).

There are, however, great differences between languages in terms of the state of their "development" for written uses and the communicative needs of modern, industrialized societies. (Ferguson, 1968), and there are great differences between languages in the uses they are put to in different societies and evaluations made of them by their users (Hymes, 1974A). The fundamental linguistic equality of languages together with the fundamental inequalities of development and evaluation constitute one of the basic antinomies of bilingual education everywhere.

The linguistic approach makes a direct contribution in defusing conflict about language questions and in suggesting additional educational options for community consideration. It makes a more indirect but equally important contribution in emphasizing the role of dispassionate, systematic inquiry in the setting of goals and making of policy. In this latter contribution it is, of course, only exemplifying a theme of social science and humanistic scholarship which is evident in the papers prepared for this whole series.

NATURE OF HUMAN LANGUAGE

The expression "bilingual education" implies the use of two or more languages, and the notion of the fundamental equality of languages implies that different languages exist and can be compared. Both seem to imply that it is always clear whether two varieties of human language constitute two different languages or are only two varieties of the same language. Yet, the defining criteria for identifying "a distinct language" are by no means clear and well agreed upon. Some German universities have separate departments of the English and American languages. Norwegians are not agreed as to whether they have two languages or one (Haugen, 1966). In China, mutually unintelligible varieties are considered to be dialects of the Chinese language, not separate languages (Lehmann, 1975); yet in Czechoslovakia, Czech and Slovak, which differ only slightly, are treated as two languages. This definitional question has been treated many times by linguists and sociologists of language (e.g., Ferguson and Gumperz, 1960; Kloss, 1952) who generally agree that both linguistic and sociological criteria must be employed. For most programs of bilingual education this question does not arise at all, but in the U.S., there are bilingual programs where this is a troublesome issue. For example, in many Chinese-American communities the teaching of (or in) Chinese may involve the use of standard Chinese (Mandarin or Putonghua) which is as different from the pupils' home language as, say Dutch is from English. Or, it may be important that a Tagalog-English bilingual program specify that the language is Pilipino, not Tagalog, even though the difference between the two is not very clear.

Every spoken language has several components or levels reflected in the linguistic analysis: the pronunciation (phonology); the grammar proper (syntax or morphosyntax); the vocabulary (lexicon or lexis); patterns of discourse beyond the sentence; meanings associated with the grammar, vocabulary and patterns of discourse (semantics); and the rules of use (pragmatics). Linguists disagree on the boundaries of these components and on theories of organization and representation, but all recognize these basic components in some form. They are relevant to discussion of bilingual education, because they may vary independently from one

language to another and may be learned differentially. To take a single example: In the acquisition of a second language, the learners' errors in pronunciation tend to reflect the structure of their first language, and younger children acquire the new pronunciation earlier and more accurately than older children; the learners' errors in syntax in second language acquisition tend to reflect universal principles similar to those of first language development, and older children often do as well as or better than younger children (Fathman, 1976; Wode, 1976).

Linguists have found that the internal structure of languages (phonology, syntax, etc.) reflects a universal framework, has universal properties and exhibits universal tendencies of change, although the differences between languages may be very great within these universal limits. Thus, all languages have some way to express transitive propositions of the sort "John (Subject)-hit (Verb)-the ball (Object)," but in some languages (e.g., Japanese and Turkish) the normal order is SOV, in others (e.g., Biblical Hebrew and Classical Arabic) it is VSO, and in English and most European languages it is SVO. All languages have at least some "relator" words (e.g., *under*, *through*, *with*) used with nouns, and in SOV languages these normally come after the noun ("table under") while in VSO and SVO languages they normally come before the noun ("under table") (Greenberg, 1966). In all languages, expressions of time are based on expressions of spatial relations (*in a box*, *in five minutes*) (Traugott, 1974). Linguists during the last decade have intensified their study of these "universals" of language and the nature of specific language differences within them (Greenberg, 1966; Bach and Harms, 1968; Li, 1974, 1976; Ferguson et al, 1975).

The universal characteristics of language are relevant for bilingual education in the same way they are relevant for any education: They teach us that the striking and exotic differences we find in languages and cultures are all variants of a common human pattern. They are relevant also in a special way for bilingual education since they seem to be intimately related with the way people learn languages. As Roman Jakobson first suggested for phonology, the order of development of the sound system as a child acquires its mother tongue reflects universal characteristics of sound systems in the world's languages (Jakobson, 1968). For example, all languages have a set of stop consonants (such as *p*, *t*, *k*, *b*, *d*, *g*), but languages differ greatly in the number and kind of fricative consonants they have (such as *f*, *v*, *s*, *z*, *sh*), and correspondingly children tend to master stops before fricatives in acquiring their mother tongue. Similar claims can be made in syntax, lexicon and patterns of discourse, and a doctrine of universals has become important in theories of first and second language acquisition.

More important for bilingual education than these structural characteristics are the phenomena of variation within a single language and the use of different varieties or languages within a single speech community. All languages have dialect and

register variation, and all speech communities have complex repertoires of language behavior. Understanding this variation and complexity is crucial for the analysis of bilingual education. Indeed, bilingual education programs arise in response to problems of language variation and repertoire (Ferguson, 1974).

Dialect variation in language identifies where the user comes from, either in a geographical sense or in the sense of position in the society. (For dialect variation in America: Kurath, 1972; Reed, 1967; Fasold and Wolfram, 1974; dialect studies of other languages such as Spanish and Chinese are also available.) All languages have some dialect variation even if the number of speakers of the language is quite small. The nature and extent of dialect variation differ markedly, however, from one language to another, and this may constitute a problem in mounting a bilingual education program. But more important than the variation itself is the speech community's attitude toward it. In some cases there may be great tolerance of dialect variation and in other cases there may be strong feeling for or against certain dialects. Decisions in a given program may be aided by separating linguistic analysis of the dialect variation from people's attitudes. For example, if the claim is made that the home language of a Mexican-American community is "nonstandard" so that the use of educated standard Spanish in the schools would be disruptive or impossible, linguistic analysis could show that the differences are relatively slight and that the issue is actually one of attitudes--which can be dealt with in ways quite different from the pedagogical issue of dialect variation.

Register variation in language reflects the different occasions on which the language is used. In every society, for example, adults speak differently when talking to very young children than when talking with other adults (Snow, 1972; Ferguson, 1975). In all speech communities people modify their speech in different ways according to the topic, the addressee, the formality of the occasion and a host of other social variables (Ervin-Tripp, 1964). In some communities, different languages may be used on different occasions, as in 14th century England when people used Latin in church and school, French in law courts and Parliament and English at home and in the market place (Jones, 1953). Every case of bilingual education is an effort to extend the pupils' ability to use a particular language on appropriate occasions, i.e., to match their individual competences with the intended linguistic repertoire of the community. Each of the studies reported by Tucker illustrates this point, although in each case the allocation of languages in the communicative repertoire of the community was different.

Formal education of children always involves some learning of additional registers of language. For example, the child learns to use a "classroom register" (deStefano, 1973), more formal styles of speaking and writing, and often new varieties of speech for peer interaction as well. In bilingual education

the child learns to use an additional language on appropriate occasions or to extend his competence in two languages to additional registers. Bilingual education is nearly as old as formal education itself, being attested as far back as the third millennium B.C. when Akkadian-speaking children in ancient Mesopotamia studied the unrelated Sumerian language for use in special formal, literary and administrative contexts. Bilingual education in one form or another has been a prominent form of elite education in Europe for centuries and is widespread throughout the world today (Ferguson, Houghton and Wells, 1973); linguists recognize it as one of the common means of assuring that children acquire the repertoire of varieties/languages which they need in their speech community.

Before moving to consider bilingualism itself in linguistic terms, we should examine one other feature of language difference which sometimes plays an important role in bilingual education: The use of different orthographies or writing systems.

Most languages in the world are not regularly written--either they have no written form at all or the written form is used only rarely and by few people. If an unwritten language is to be used in a bilingual education program--as may be the case with some Native American languages--the planners may have the problem of devising an appropriate orthography or deciding among alternative possible orthographies. This is a field in which linguists have extensive experience (Fishman, 1977). Most languages likely to be used in U.S. bilingual education programs are, however, written, and have a standard orthography which would be the expected choice in any such program. Writing systems differ from one another greatly in their complexities, and in the fit of orthography to pronunciation. Most writing systems in the world today are left-to-right Roman alphabets much like our own, and the differences among them have to do with special symbols or diacritics (å, ö, ð, ç, é, etc.) or with the varying phonetic values of the letters (e.g., *c* in Turkish is English *j* in *jet*, German *j* is English *y* in *yet*). Other similar alphabets are also used, such as the Cyrillic alphabet of Russian and other languages, but many of the world's major languages (such as Chinese, Japanese, Arabic, Hindi) use writing systems which differ in fundamental ways from our alphabet. These systems may have large numbers of characters, go right-to-left, or top-to-bottom and many reflect a variety of the language very different from ordinary speech. Recent experiments have shown remarkable positive transfer--at least under some conditions--from one Roman alphabet to another, but the teaching of reading in a very different writing system may pose the severe problem of requiring additional time and specialized instructional materials. Expectations of achievement may thus differ from one language to another in terms of the nature of the writing systems.

Most efforts in linguistic analysis and in the construction of general linguistic theory have focused on single languages as the object of study even when the aims are comparative or

sociolinguistic, and there is correspondingly little that linguistic theory has to offer in the analysis of bilingual behavior. Efforts to measure and characterize adult bilingualism have generally been psychologically or psycholinguistically oriented with little attention given to linguistic structure as such or the question of how the total linguistic structure of the two languages is represented in the human organism. Models such as the distinction between "coordinate" and "compound" bilingualism (Lambert, 1969) or between bilingualism of "instrumental" versus "integrative" motivation (Lambert, 1967), or "additive" versus "subtractive" bilingualism have had no linguistic repercussions. Three beginning lines of research are promising, however, and deserve mention even though their full implications for bilingual education are not yet clear: *code switching*, *early child bilingualism* and *phonetic perception*.

Gumperz (1976) and his associates have shown that code switching itself may have communicative functions of various kinds. Recent studies of very early bilingual development in children (up to about three years of age) give evidence that the children at first have a single linguistic system with elements drawn from both languages, and then gradually differentiate the two by applying "rules" selectively (Leopold, 1939-49; Major, 1977). A striking recent study of phonetic perception and production in many monolingual and bilingual (English and French) Canadians suggests that some bilinguals have two productive systems corresponding well to those of monolinguals, but have developed a combined perception system different from either monolingual system (Caramazza et al, 1973). All three of these lines of research should be followed up, and in due course what is learned from them will doubtless have implications for bilingual education.

LINGUISTIC THEORIES OF LANGUAGE ACQUISITION

Only two of the major linguistic theoreticians of the first half of the twentieth century, Otto Jespersen (1922) and Roman Jakobson (1968) claimed that linguistic theory should account for the facts of language development in the child and that data from language development are valuable for the linguistic theoretician. Correspondingly, little linguistically oriented research on child language was undertaken, with notable exceptions such as Leopold 1939-1949. More recently, however, the place of language development in linguistic theory has been increasingly recognized (Chomsky, 1965), and from 1960 to the present, a large amount of linguistically informed child language research has added substantially to our understanding of the processes involved (Bar-Adon and Leopold, 1971; Ferguson and Slobin, 1973; Dale, 1976). At first the research literature was on mother tongue or first-language acquisition (sometimes with child bilinguals), but more recently it has begun to include the acquisition of second or other languages--both child and

adult--inside or outside the classroom (see Hatch, this volume). A brief review of this literature completing the treatments by Tucker and the viewpoints will show its relevance for bilingual education.

At the beginning of the 1960's the dominant theories of child language development were of the behavioral type which applied various forms of learning theory to language behavior. They emphasized the learning of discrete items, selective reinforcement by the mother and practice on the part of the child (see Tucker's paper and his reference to Mowrer, 1954; Osgood, 1957; Skinner, 1957; Staats, 1968). For the acquisition of pronunciation, their theories were modified in various ways and alternatives were offered, notably that of Jakobson, a leader of phonological development regardless of the language learned or the mother's reinforcements (for a discussion of various theories of phonological development see Ferguson and Garnica, 1975). Linguistically based alternative theories which covered all of language (including syntax, vocabulary, etc.) did not appear, however, until Chomsky's work changed the general direction of American linguistics.

Chomsky's *Syntactic Structures* and his review of Skinner (Chomsky, 1957, 1959) set the dominant theoretical position of the 1960's. This view pointed out the inadequacies of learning theories, calling attention to the incredible complexity of human language, the rapidity with which it is mastered by young children and the creative ability of children to produce forms and sentences they have never heard. In this view a large part of the structure of human language is built into the organism (the "innateness hypothesis") and gradually unfolds in response to the fragmentary, imperfect speech to which the child is exposed. Children are seen as little linguists evaluating alternative possible grammars of the surrounding language on the basis of their innate "knowledge" of grammatical relations, phonological features and other universal characteristics of human language (McNeill, 1970). This kind of linguistic theory stimulated an impressive amount of psycholinguistic experimentation and observation of children acquiring their mother tongue, and the research findings led to modifications of the original claims.

At the present time there is no dominant linguistic theory of acquisition, but instead we have a growing body of information which is contributing in turn to the development of general linguistic theory. Current work shows the importance of four factors which were largely ignored by the two preceding theories: (a) language input to the child, (b) patterns of verbal interaction, (c) verbal "routines" and (d) individual differences. The input factor includes the largely unconscious but highly systematic modifications which adults make in their speech when talking to children, producing a relatively simple, clear, repetitive, "expressive" kind of language (Snow and Ferguson, 1977). Study of interactive patterns suggests that some syntactic

constructions and features of discourse are learned first in exchanges and then in the child's own sentences (Keenan, 1974). "Routines" are chunks of language learned as unanalyzed wholes useful for communication and only gradually freed up by identification of their parts (Brown, 1973), and individual differences in language development are strategies employed or routes followed by individual children within the universal tendencies which much of the research has discovered.

This brief summary does not do justice to the substantial body of theory and empirical findings in the field of language development which is represented in a number of major volumes (Brown, 1973; Bloom, 1970, 1973; Bowerman, 1973; Slobin, 1971).

OVERVIEW

Tucker's paper, although called a "linguistic review" has almost nothing about linguistics in it. Linguistic factors in bilingual education are often less important than social and educational factors, but they have a "core relevance" because language use is the central issue in it. Three contributions of general linguistic theory and research have been reviewed: linguists' approach to language, the nature of human language and theories of language acquisition. Linguists assume language behavior is patterned and subject to systematic, objective analysis. All natural mother tongues are equal in the sense that none is more "primitive" in structure or more inadequate for everyday communication than another. However, languages differ greatly in their state of development for a full range of use in modern industrial societies. They also differ in the evaluations which their users give them (and these evaluations determine in part processes of language change). Equality in linguistic structure but inequality in development and evaluation constitute a basic antinomy in bilingual education. The linguistic approach offers a valuable resource and perspective.

The definition of "a language" is difficult and involves both linguistic and sociological criteria. All languages share a universal framework of properties in pronunciation, grammar, vocabulary, forms of discourse and "rules for use," and these universal properties constitute an important determinant of the ease and routes of language acquisition. Differences between languages within the universal framework may be very great and the nature of these differences is particularly relevant in certain aspects of second language acquisition.

All languages have dialect and register variation, and all speech communities have complex repertoires of different varieties of different languages. Although the extent of dialect variation differs from language to language, the attitudes toward it are more important considerations in bilingual education. Formal education, which always extends the pupils' repertoire of registers, may take the form of bilingual education, which extends the pupils' repertoire of languages.

Linguistic, as opposed to psychological and sociological analysis of bilingualism, has been rare, but recent studies of code switching, early child bilingualism, and the phonetic perception of bilinguals open up promising lines of research which will have implications for bilingual educators. Different kinds of bilingualism may have very different linguistic characteristics and deserve research.

The use of similar writing systems in two languages tends to promote positive transfer rather than interference, and basic literacy skills can often be transferred from one language to the other with little additional training. The use of more complex writing systems such as Chinese, Japanese, Korean, may be easier at early stages of education, but the additional burden of learning adds significantly to the time requirements of a bilingual education program.

Earlier linguistic theory had little to do with acquisition, but now linguistically oriented theories of first language acquisition are dominant, emphasizing the complexity of language, the learner's creativity and universal tendencies in acquisition. Recent work adds consideration of input, interaction, unanalyzed "routines" and individual differences. Comparable research is underway in second language acquisition and bilingualism.

Teaching Bilingual Children

The following paragraphs present two perspectives: That of a teacher trainer in charge of a bilingual/cross-cultural teacher training program and that of a Chicano linguist and educator deeply concerned about the loss of Spanish in the Southwest. The issues touch upon some of the areas developed by Tucker, some deal with the "nitty-gritty" aspects of bilingual education, and others are concerned with the philosophy and future direction of the U.S. bilingual movement, especially among Chicanos.

To begin with, I commend Tucker for his illuminating synthesis of existing empirical evidence relating to bilingual education. I applaud the caution with which the current data have been interpreted. The lack of data of an empirical nature, as reflected by the limited number of studies available for scrutiny, is an accurate indicator of how far we still have to go in bilingual-bicultural program evaluation, its overall design as well as the development of specific instruments for the different program components.

At the beginning of the national U.S. bilingual education movement, there was a feeling among Chicano educators and the Chicano community that bilingual education presented a viable alternative to traditional, monolingual English instruction. It made eminent sense to present content material to the Chicano child in Spanish while teaching him English as a second language in a gradual, systematic fashion. No attempt was made to take into account the enormous diversity in Spanish and English linguistic abilities within the heterogeneous Chicano population. For many Chicano school children, the result was one of frustration as they sought to grapple not only with English, but with a prestige dialect of Spanish alien in its lexicon to their own.

This type of simplistic mismatch between what is needed and what is provided has led to a growing feeling of disenchantment about the value of bilingual education to the Chicano. There is

growing concern among Chicano educators and classroom teachers that bilingual programs as currently practiced serve only the needs of recent immigrants from Mexico or Central and South America. Classroom teachers involved in bilingual education programs often report that the new arrival from Mexico excels in content material presented in Spanish, while Chicano children who are bilingual to some degree have difficulty with the same material.

The question must then be asked: Is bilingual education intended to serve the needs of the monolingual child as he attempts to learn the language and ways of the dominant culture, or is it meant to assist the bilingual child to further develop his cognitive as well as linguistic skills in the two languages? In seeking an answer to this question, it is necessary to examine the unsophisticated approach to bilingual education taken by all bilingual education programs around the country today. "Bilingual" means one thing: Two languages, each represented in instruction by one variety, each requiring a level of proficiency that may or may not be present in the linguistic repertoire of many school age Chicano children. Usually, the prestige dialect of the languages in question is the variety used as a medium of instruction and, more importantly, in instructional materials-- a significant amount of which is produced abroad.

In none of the programs is there provision for accommodating instruction to the level of linguistic development of children reared in a bilingual environment, children whose simultaneous and unsystematic exposure to both languages has resulted in an unknown level of proficiency in each that is different from that of comparable children reared exclusively in a one language environment. The erroneous assumption is too often made that all bilingual children who speak Spanish and English can speak each with the same level of sophistication, and that these levels match the levels used by the teacher in instruction. As a result of this mistaken belief, an ever-growing proportion of the largest language minority group in the U.S. is prevented from reaping the full benefits of bilingual education.

What is called for is a differentiated approach to bilingual education, an approach that will begin where the child is in each language and lead him/her to full fluency in both languages. Such an approach would have as its base a thorough description of the Chicano child's range of linguistic abilities in English and Spanish. Regrettably, the linguistic abilities of Chicano children have been all but ignored by researchers (for a comprehensive review of the state of the art, see Teschner, Bills and Craddock, 1975). Some of the more obvious phenomena, such as code switching, have been studied, but not to the extent that is useful to the classroom teacher attempting to implement a bilingual education program. Clearly, much research remains to be done in this area.

Saville and Troike (1971) state that "bilingual education is not just 'education for bilinguals'...." As currently

practiced with Chicano children, bilingual education appears to benefit the monolingual Spanish speaker the most and the bilingual English/Spanish speaker the least. It appears to be geared to the needs of the monolingual Spanish speaker learning English as a second language, and not to the needs of bilinguals, and certainly not the needs of children whose command of either language may be less than that of monolinguals of either language.

In attempting to meet the needs of all linguistically different children, it becomes necessary to distinguish those programs designed for non-English monolinguals wishing to acquire English while maintaining their native language, from those designed to serve a bilingual population. The needs of both groups are different and require different approaches. For non-English monolinguals wishing to learn English while maintaining their first language, as with monolingual Mexican immigrants, the current approach of using an educated standard would seem appropriate. For a bilingual population such as the Chicano population of the Southwest, the approach (in view of our complete lack of information on the linguistic abilities of this segment of the population) should be a cautious one. Every attempt should be made to build on structures the child knows in each of the languages, regardless of whether these structures correspond to those found in curriculum materials imported from abroad. As mentioned earlier, the Chicano population exhibits a great amount of diversity with regard to proficiency in Spanish and English. To date, all bilingual programs serving Chicanos have proceeded on the assumption that all Chicano children were as proficient in Spanish as monolingual Spanish speakers of the same age from other countries. Such programs have served the extreme ends of the spectrum, but have left the middle largely untouched. And it is the student in the middle--the one who is proficient in each language to some unknown degree--that is increasingly demanding our attention.

In the view of this writer, one of the most important and beneficial effects of bilingual education programs has been the renewed interest in maintaining the Spanish variety spoken by Chicanos and its attendant life style. In spite of the sad state of bilingual instruction vis-a-vis the needs of bilingual Chicanos, there is an ever stronger sense of pride in being Chicano and speaking Spanish. Partly because of improved job opportunities for bilingual teachers, more Chicanos are maintaining and, in some cases, relearning Spanish. There is a growing awareness that it is possible--and highly desirable--to be bilingual. In some cases, this new spirit has led to the initiation of bilingual programs in which monolingual English speaking Chicanos once fluent in Spanish attempt to recapture the language. As J. González (1975) describes it: "In this type of program a strong attempt is made to restore to children the option of learning the language and culture of their ancestry even though they themselves may have lost it due to assimilation."

All of this is not intended to suggest that ethnic identity and language loyalty are new to the Chicano community--far from it. Both characteristics have always been strong in some areas of the Southwest, especially the border region. In my home town in south Texas near the Mexican border, it was assumed that all Chicanos spoke at least Spanish. The exact opposite situation was evident in my first contact with Chicanos from northern California. It was assumed that all Chicanos spoke English; one could make no such assumption, however, regarding their Spanish fluency. Even some of the Chicano students that were most in favor of bilingual education were monolingual English speakers. Bilingual education has helped rekindle pride in one's ancestral language and culture, regardless of whether he any longer speaks the language or not.

In spite of these significant strides, there are obstacles to the maintenance of the first language, especially in the place that is supposed to foster bilingualism--the bilingual education classroom. Studies by Phillips (1975) and Shultz (1975) involving the use of Spanish and English by bilingual teachers in Los Angeles and Boston showed an overwhelming tendency among the observed teachers to switch from Spanish to English in teaching Anglo children Spanish. The teacher instructing native Spanish speaking children in English showed no such tendency to switch to Spanish (though she, too, was bilingual). A recent report by the U.S. Government Accounting Office (1976) concludes that there is too much English spoken in bilingual education classrooms. If this is indeed typical of what goes on in bilingual classrooms, and I am tempted to believe that it is, we need to take a closer look at these programs and make the necessary adjustments. If the first language is to survive on a par with English, it must be given the opportunity to develop in the bilingual classroom.

The practice of code switching poses some interesting pedagogical questions. Specifically, how should the bilingual teacher respond when the Chicano child changes from Spanish to English within the same sentence? Should he/she accept it as normal or attempt to get the child to continue in one language or the other? What attitudes should teacher training programs attempt to instill in teachers with regard to code switching?

The problem is as complex as it is intriguing. The sociolinguists and dialectologists (Gumperz and Hernández-Chávez, 1970; Sánchez, 1973) would probably argue that it is part of the child's linguistic repertoire and should be respected as such. Code switching is rule-governed behavior, determined in part by the social situation, the persons involved, the linguistic abilities of the persons conversing and so on. Proponents of separating the two languages maintain that the child's switching occurs when he does not know the label for a certain concept in the language he is speaking, and has it readily available in the other language (G. González, 1973). Code switching is then

viewed as harmful, for it does not allow the child to develop fully in either language.

I am inclined to support this second view. If the development of proficiency in Spanish is important, if the children in our classrooms are to develop as well in Spanish as in English, then we must encourage them to increase their capability in Spanish at every opportunity. I am not convinced that children at the elementary school level possess both a pure Spanish and a variety that includes code switching, and that they can use each appropriately. It is important to distinguish between code switching that is performed because of a deficiency in the mother tongue and that which comes about as an option available to a person possessing both varieties. The fact is that the majority of Chicano children come to school more fully developed in English vocabulary than in Spanish, especially in areas of science and math, because of their early and continuous exposure to English language television and radio. Such children switch to English because they *know* the word in English and don't happen to know it in Spanish. This is the direct opposite of what Lance (1969) observed in code switching among adults. His Chicano subjects seemed to know the "switched" word or phrase in both languages. Clearly, studies similar to Lance's but involving children in bilingual programs would contribute greatly to resolving the current dilemma.

Before the areas for needed research are discussed, there are two concerns of importance to teacher trainers that need to be mentioned. The first involves attitudes toward accented speech. Specifically, majority culture attitudes toward the accented English speech of Chicanos. Tucker's paper all but eliminates pronunciation from consideration as an important linguistic skill. It is a fact of life in the Chicano community that those who achieve the highest degree of success in the dominant Anglo society are those that have the least amount of Spanish "accent" in their English speech. I would be hard pressed to name even *one* successful Chicano who has a noticeable accent in English and has managed to succeed in the Anglo world. Accents are acceptable and even charming when the persons possessing them are successful in their line of work; we then attempt to imitate them and their "accent." On anyone else, an "accent" is a burden, an obstacle to success.

This is not to suggest that we drill the children with English pronunciation exercises until they are absolutely bored. But it does suggest that as the child gets closer and closer to adulthood, as he gets closer to confronting the real world, the question of "accented speech" will be more than a theoretical topic of discussion, it will become ugly reality. It is to suggest that perhaps we should focus more on pronunciation toward the end of the child's public school career, as his encounter with the job market and other realities draws near. To dismiss pronunciation altogether would be a serious mistake.

The second concern centers around relations between teachers in the regular elementary schools and their bilingual program colleagues. In the majority of cases the situation can be most generously described as strained, and often is blatantly hostile. Many times these attitudes reflect lack of information or misinformation as to the aims and objectives of bilingual education. In such cases, we would do well to heed Tucker's suggestion about publicizing the aims of the program far and wide. It would be difficult to overemphasize the importance of establishing good relations with all teachers in the district, especially those in nonbilingual classrooms. If bilingual education is to have a fair chance at success, it will need support from all quarters, not just the bilingual teachers and the minority community.

As it enters its ninth year, the practice of bilingual education on a national scale finds itself in the awkward position of being far ahead of research relevant to its implementation. The following areas are illustrative of the type of research that needs to be undertaken in order that bilingual education may have the maximum impact on non-English speaking children.

1. A thorough linguistic analysis of the languages in which bilingual programs are currently being offered. Except for some of the major world languages, this area remains untouched. Such studies would provide the basis for developing curriculum materials in content areas in any two languages, as well as contributing to the teaching of any language as a second language.

2. A sociolinguistic analysis of the major varieties of the languages used in bilingual education programs. Especially helpful would be information regarding the status of the first language with respect to the second language, the roles of the two languages within specific bilingual communities, and the attitudes toward each language by members of the communities involved.

3. The development of instruments to measure the bilingual child's proficiency in each language. This would help assure that the language used in instruction and the instructional materials utilized would be geared to the specific population being served and not on some mythical bilingual child.

4. Language acquisition studies focusing on those languages being used as media of instruction in bilingual education programs. Such information would provide an accurate picture of what normal language development consists of in the languages in question. With few exceptions, most language acquisition studies that have been carried out have dealt with the English language. Language acquisition data in the other languages would also aid in establishing realistic language proficiency objectives in both languages.

5. Studies dealing with dormant linguistic abilities in the first language. Anecdotal evidence suggests, for example, that Chicanos who spoke Spanish at childhood and lost it as a result of assimilation are later able to recapture it in a shorter amount of time than it takes those Chicanos who never

learned it. Knowledge concerning the exact nature of these dormant abilities would assist greatly in the diagnosis and placement of Chicano students with respect to language ability in Spanish. In addition, it may help uncover some answers to new types of interference experienced in learning a second language. It would be beneficial, for example, to explore the similarities and differences between "active" first language interference and "dormant" first language interference on the second language.

6. Sociolinguistic studies on code switching in the bilingual classroom. Under what conditions does code switching occur in the classroom? To what extent does code switching reflect the child's lack of ability in either language? How does code switching among children in the bilingual classroom differ from code switching among adults of the same community? To what extent does allowing code switching in the classroom hinder the child's full development in both languages?

7. Studies on the most effective methodologies for bilingual classrooms. Are there methodologies that are equally effective regardless of the cultural or language group? In the presentation of content material, should the first or the second language be used? Or does it depend on the nature of the material being presented? Should all material always be presented in the students' dominant language?

8. Longitudinal studies on the effects of bilingual education on subsequent educational experiences and occupational success. Does bilingual education contribute to the maintenance of the first language, and if so, to what extent?

9. Studies comparing bilingual programs in communities with strong first language maintenance (such as the border areas of the U.S.) with those that are removed from strong first language influence (such as Dallas or Sacramento). In what ways does a strong or weak first language heritage and maintenance influence the nature of the bilingual program in those areas, especially the role of the first language in such programs?

10. Bilingual education at the secondary level. What modifications in philosophy are desirable (if any) in proceeding from the elementary grades to the secondary level? As the student's confrontation with the expectations of the English speaking job market approaches, should the philosophy of the program be shifted more towards the learning of English and away from the maintenance of the first language? Or are these two never in competition for the limited amount of time available?

Second Language Learning

In order to have as balanced a discussion as possible, I have been asked to limit my review of Tucker's paper to the area of second language acquisition research as it relates to the factors influencing bilingualism. I am setting aside, then sections of his paper which deal with affective and cognitive gains that children make in the programs, and the arguments about how best to influence the child's acquisition of reading in the two languages.

Tucker's basic arguments are that children in the three programs discussed make excellent overall progress in the second language when it is used as a medium for subject matter instruction, that formal language instruction does not appear to be necessary to the process and further that the learner continues to maintain and develop his first language skills on the par with monolingual students. While the age of the learner is not a major factor in the report, a second issue we might want to examine is whether "the earlier, the better" is the case for the development of bilingual language skills.

Tucker is understandably cautious in interpreting data on these immersion and bilingual programs primarily because of his dissatisfaction with test instruments used in the evaluations and, particularly, with global measures using five to 10-point scales. There are, I believe, at least four areas in second language research to which we might turn for evidence which might corroborate or further qualify Tucker's basic findings.

Longitudinal, in-depth case studies of individual children either acquiring two languages simultaneously or adding a second language. These studies might give us more specific data about the ease/difficulty of second language learning when formal instruction is not given. They can give us additional data about learners who begin learning a new language at different ages and on the order in which various parts of the language are learned.

Experimental cross-sectional studies which have tested many of our hypotheses about second language learning. These studies

can give us more specific information about the learners' proficiency in each language skill to supplement the global picture of overall proficiency given us in Tucker's report. The longitudinal studies and cross-sectional studies together can give us additional data about the amount of variation in speed of acquisition and the grammatical accuracy of language produced by second language learners.

Studies of language switching and mixing. These studies can give us information which separates language mixing as a developmental phenomenon (when the child is not yet proficient in the new language) from the skilled use of two languages in a mixed code by fluent bilinguals.

Classroom discourse analysis. This area can give us information about the kinds of programs, the kinds of language modeling, interaction and correction that occur in language instruction classes, and in classes where the language is not formally taught but used as a medium for subject matter instruction. It can also give us information about discourse styles which may be language or culture specific.

LONGITUDINAL CASE STUDIES

Table 1 on page 62 presents studies which are, for the most part, longitudinal studies of one or more children as they either simultaneously learn two languages or add a second. If you scan the date column you can see the tremendous spur that bilingual education has given to research in this area. Until 1970, we had to rely primarily on Leopold's (1939-49) famous study for information about bilingual language development of the young child. That source has, even today, perhaps some of the most valuable information for the student of child bilingualism.

The studies in Table 1 allow us to make general comparisons across languages since they involve children from many language backgrounds. The age range of the learners is also wide. More and more studies of older children, adolescents and adults are being done in an attempt to document differences over the age range in learning abilities and styles. Some of the studies are long-term projects (for example, Leopold's study covers development almost from birth to adolescence). Others involve data collected over a one-year period (Young, 1974); others involve descriptions of specific phenomena over a short period of time. (For example, Celce-Murcia's 1975 study is a brief report showing how her daughter avoided words with difficult fricative sounds. Since /f/ was particularly difficult for her, she would select words from the other language to avoid f's thereby creating such mixtures as *pied-ball* for *football*, etc. The period covered is only a few months.)

In many of the studies the learner is truly immersed in the new language. He has maximum exposure to the second language in schools where everyone else is a monolingual speaker of the new language (Wagner-Gough, 1975). In other studies, the learner

Table 1

Observational Studies of Second Language Acquisition Arranged by Age of Subject
(from Hatch, 1976)

<i>Subject Name(s)</i>	<i>Age</i>	<i>Languages</i>	<i>Investigator(s)</i>	<i>Year</i>
Hildegard	Complete record emphasis on first 3 years	English & German	Leopold	1939-1949
Douchan	1st 2 years	Serbian & French	Pavlovitch	1920
Eta, Ester	1st 3 years	Serbo-Croatian & Hungarian	Mikes	1970
Girl child	1st years	Russian & Georgian	Imedadze	1960
Carlito	1st 3 years	Spanish & English	Mazeika	1972
Mario	1st 5 years	Spanish & English	Fantini	1974
Sandra	1st 3 years	Swedish/Finnish & English	Murrell	1966
Louis	1st 3 years	German & French	Ronjat	1913
Stephen	1st 3 years	Garo & English	Burling	1959
Caroline	2;4	English & French	Celce-Murcia	1975

<i>Subject Name(s)</i>	<i>Age</i>	<i>Languages</i>	<i>Investigator(s)</i>	<i>Year</i>
Michael	3	French & English	Swain & Wesche	1973
Sven	2-4	Swedish & Estonian	Oksaar	1973
Takahiro	2:6-3:1	Japanese & English	Itoh	1973
Rebecca	3	English & Urdu	Hansen-Bede	1975
Miki	3	Japanese & English	Yoshida	1976
6 unnamed subjects	range 2½-8 years	Chinese & English	LaMarche	1972
4 unnamed subjects	range 3:7-7:6	English & German	Wode	1974
Lars, Inga, Heiko, Brigit	range 3:4-9:6	German & English		
Uguisu	5	Japanese & English	Hakuta	1974
Paul	5	Taiwanese & English	Huang	1970
Marta	5	Spanish & English	Cancino	in progress
Rune, Reidun	6 and 3:9	Norwegian & English	Ravem	1968
Toko, Maija & 2 other subjects	range 4½-8	Several languages & English	Keller-Cohen	in progress

<i>Subject Name(s)</i>	<i>Age</i>	<i>Languages</i>	<i>Investigator(s)</i>	<i>Year</i>
Julie, Guy	5 and 7	English & German	Felix	1974
Homer	5:11	Assiryan, Persian & English	Wagner-Gough	1974
10 unnamed subjects	range 4:11-5:9	Spanish & English	Adams	1974
8 unnamed subjects	mean age 5:7	English & French	Swain	1972
12 unnamed subjects	5-7	English & Spanish	Flores Boyd	1973 1974
6 unnamed subjects	range 5½-6½	English & Spanish	Dato	1972
Girl child	6:4	Spanish & French	Tits	1948
Alma, Juan & Enrique	range 5½-6½	Spanish & English	Young	1974
Lydia	6	Arabic (Egyptian) & English	Rizsk	in progress
Eva	6:10	Hungarian & French	Kenyeres & Kenyeres	1923
Akio, Haruo	6:11 and 7:6	Japanese & English	Gillis & Weber	1975

<i>Subject Name(s)</i>	<i>Age</i>	<i>Languages</i>	<i>Investigator(s)</i>	<i>Year</i>
Daniel	7	English & French	Savignon	1974
Ken	7	Japanese & English	Milon	1972
Angel	8	Spanish & English	Peck	1976
31 unnamed subjects	range 4-9	English & French	Ervin-Tripp	1973
3 unnamed subjects	range 7-10	Indonesian & English	Isman	1973
3 unnamed subjects	unknown	Zaire, Spanish, Arabic (Saudi) & English	Nielsen	1974
5 unnamed subjects	range 8-15	Spanish & English	Warshawsky	1975
Male child	10	French, Spanish & English	Chamot	1972
Male child	12	Arabic (Egyptian) & English	Rouchdy	1970
Ricardo	13	Spanish & English	Butterworth	1972
Marta, Cheo, Juan, Jorge Alberto, Dolores	2 children 2 adolescents 2 adults	Spanish & English	Cazden, Cancino, Rosansky & Schumann	1975

<i>Subject Name(s)</i>	<i>Age</i>	<i>Languages</i>	<i>Investigator(s)</i>	<i>Year</i>
Ginger	adult	English & French	Johnston	1972
Female subject	19	Arabic (Saudi) & English	Hanania	1974
Rafaela	adult	Spanish & English	Brunak, Fain & Villoria	1976
2 unnamed subjects	adult	Spanish & English Vietnamese & English	Schwartz & Fain	in progress
Zoila	adult	Spanish & English	Shapira	1975
Wimmi	adult	Punjabi/Hindi/English and English	Gasser	1975
Alberto	adult	Spanish & English	Schumann	1975

does not have such total exposure to the new language. He may be in a classroom where only the teacher speaks the new language (as in the Montreal language-switch program described by Tucker), or in a class where the teacher and some portion of the other students speak the language to be learned (Adams, 1974). He may be observed at a school where all the instruction is in his home language, or all in the second language, or in some ratio of home to school language (and, interestingly, all of these are called bilingual education programs). He may move from one language environment to another for varying periods of time (between U.S. and Germany in the Leopold study; between Vermont and Bolivia in the 1974 Fantini study). He may play with children who speak only one of his two languages, both languages or who prefer to mix and switch languages.

Information in these studies not only documents the developmental acquisition of specific language structures in the learner's speech, but also looks at a wide variety of other questions such as the child's avoidance of, or eagerness to use the second language (for avoidance: Young, 1974; for eagerness: Huang, 1971), or fluctuation between these extremes (see Itoh, 1973; Kenyeres and Kenyeres, 1938). They investigate his ability/inability to maintain both languages in various language communities (Murrell, 1966; Kenyeres and Kenyeres, 1938; Leopold, 1939-49), or over periods of reduced exposure to one or the other of his languages (Itoh, 1973; Huang, 1971; Cohen, 1974), and they investigate his general social/nonsocial behavior during the study (Kenyeres and Kenyeres, 1938; Butterworth, 1972).

The studies also document very different learning styles for different children. Some children studied go through very clearly differentiated stages in language production (Huang); others seem to use a wide variety of standard and non-standard forms in almost free variation before sorting out standard language patterns (Wagner-Gough, 1975).

In spite of this variance in age of learner, in exposure time to the two languages, differences in opportunity to speak with child, as well as adult, native speakers of each language, and many other factors, we do see much similarity in the development of specific structures of the language. For example, learners all appear to learn to express plurals early; all learners appear to acquire verb forms for on-going actions early; all learners seem to follow a developmental sequence in acquisition of negation and of question-formation. For example, Cazden et al (1975) show that their subjects begin expressing negation by using *No + V* constructions such as:

- (4-1/2 yrs.) Marta: I no can see.
Carolina no go to play.
- (5 yrs.) Cheo: You no walk on this.
You no tell your mother.
- (10 yrs.) Juan: I no use television.
Today I no do that.

(12 yrs.) Jorge: They no have water.
But no is mine.

(33 yrs.) Alberto: I no understand.
No like coffee.

At the same time or shortly after the *No + V* constructions appear, the subjects began negating with *Don't V* constructions such as:

Marta: I don't hear.
He don't like it.
Cheo: I don't understand.
I don't see nothing mop.
Juan: I don't look the clog at this time.
Don't have any monies.
Jorge: My brother and I don't have more class.
That don't say anything.
Alberto: I don't can explain.
I don't have a woman.

Next the subjects used the *AUX + neg* constructions in which negative is placed after the auxiliary:

Marta: Somebody is not coming in.
You can't tell her.
Cheo: It's not danger.
He can't see.
Juan: I haven't seen all of it.
It wasn't so big.
Jorge: No, he's not skinny.

Finally, the learners who reached the final stage learned the analyzed forms of *don't* (do not, doesn't, does not, didn't, did not) of standard English. Further, it was possible to chart the use of each of these forms for each subject over time to trace how quickly each subject moved through the progression and also to trace the clarity of the switch from one stage to the next. For a more detailed discussion of these developmental sequences and variations from such sequences, please see Cazden et al (1975), Young (1974), Chamot (1973), Hatch (1973), and Hatch and Wagner-Gough (1975).

The data from these studies (none of which involve formal language instruction) then support the notion that one can learn a new language simply by being exposed to the language and interacting with speakers of that language. And it also supports the notion that there is at the very least a rough developmental trend that can be seen in a variety of structures over data collection time periods. The data also show a tremendous amount of variation in how much of the language system is learned and in the speed of learning. For example, Schumann (1975) describes in detail the fossilization at an early development stage

(insofar as English morphology is concerned) by the oldest subject in the Cazden (1975) study mentioned above. However, age is not an entirely reliable predictor nor is it the only variable which must be considered in explaining the variation in speed of second language learning. These variables will be discussed in more depth later.

The data from longitudinal studies, however, give us no data on either success or speed of acquisition of students who are instructed in the language. Therefore, we have no further answers as to whether Tucker could possibly interpret the studies he reviewed as showing superiority in achievement by students who receive no formal instruction in the language. From these studies it seems safest to stay with the statement that formal language instruction is not *necessary* for language learning to take place. There is no evidence in these data to say whether or not instruction might help.

EXPERIMENTAL, CROSS-SECTIONAL STUDIES

Table 2 on page 70 shows the range of experimental studies that have been done testing children in the programs discussed by Tucker and in other large-scale studies such as the Culver City and OISE Projects. The studies discussed by Tucker have looked primarily at the global ability of the learning in listening, speaking, reading and writing rather than at the development of specific language structures. As he and his associates have pointed out, they are less than satisfied with the instruments for evaluating such programs. Nevertheless, they seem to me to serve very well in giving us a global view of the programs and how they compare with control monolingual groups.

Together, the observational and cross-sectional studies can give us evidence in finer detail--evidence of variation in learning which global measures such as those presented by Tucker cannot reveal. It is important that such variation be recognized. And it is important that difficulties which the learners have with particular structures of the language also be pointed out.

That is, we can be justly pleased by the language learning of students in the programs outlined in Tucker's review. Similarly, we are proud of the language acquisition of children in the Culver City project, another cross-over language program for Anglo children who have, since kindergarten, received their education entirely in Spanish. This program was modeled after the St. Lambert program discussed in Tucker's paper. The children in the Culver City project are able to communicate in almost all areas using Spanish, their pronunciation is beautiful, and their writing is expressive. Yet, at the same time, after five years in the program, the children still have not mastered the Spanish gender system, subject-verb agreement or noun-adjective agreement, using such forms as: *Estas son las ventanas de los dos casas; El viven en este casa; El hombre estan en el barco; Esta puerta es del casa azul; ...que esta es la casa gordo.* Since the children's

Table 2

Experimental Studies of Second Language Acquisition

<i>N</i>	<i>Age/Grade</i>	<i>Languages</i>	<i>Investigator(s)</i>	<i>Year</i>
<u>St. Lambert Project</u>				
X	1st grade	English & French	Lambert & MacNamara	1969
38	1st grade	" "	Lambert, Just & Segalowitz	1970
26	2nd grade	" "	" " "	"
39	1st grade	" "	Tucker, Lambert & d'Anglejan	1972
19	6th grade	" "	Bruck, Lambert & Tucker	1973
30	3rd & 5th grades	" "	Markham, Spilka & Tucker	1975
X	Kg, 1st, 2nd grades	" "	Genessee, Tucker & Lambert	1975
30	4th & 6th grades	" "	Hamayan, Markman, Pelletier & Tucker	1975
<u>Culver City Project</u>				
19	kindergarten	English & Spanish	Cathcart	1972
15	1st grade	" "	Broadbent	1973
19	1st grade	" "	Lebach	1974
12	2nd grade	" "	"	"
14	2nd grade	" "	Cohen	1974
3	2nd grade	" "	Cohen	1975
X	2nd grade	" "	Waldman	1975
24	Kg to 3rd	" "	Plann	1976
X	Kg to 3rd	" "	Jashni	1976
40	Kg-4th	" "	Ramirez	1976

<i>N</i>	<i>Age/Grade</i>	<i>Languages</i>	<i>Investigator(s)</i>	<i>Year</i>
			<u>OISE Project</u>	
24	Kindergarten	English & French	Barik, Swain & McTavish	1974
30	1st grade	" "	Barik & Swain	1974
20	2nd grade	" "	" "	"
112	1st & 2nd grade	" "	Naiman	1974
40	3rd grade	" "	Swain	1974
15	2nd grade	French & English	Hébrard & Mougeon	1975
12	range 6:1-8:3	Italian & English	Kessler	1971
55	range 6-8 years	Chinese & English	Dulay & Burt	1974
60		Spanish & English		
50	range 5-8 years	English & Spanish	Olmstead-Gary	1974
115	Kindergarten- 3rd grade	Spanish & English	Ramirez	1974
18	3rd-5th grades	Spanish & English	Cohen, Fathman & Merino	1976
32	elementary school	Spanish & English	VanMettre	1972
115	grades 3, 6, 8, 10	Spanish & English	Johnson	1973
12	3rd grade	Hebrew & English	Bassan	1973
8	adults			

<i>N</i>	<i>Age/Grade</i>	<i>Languages</i>	<i>Investigator(s)</i>	<i>Year</i>
98 188	5½-8½	Hebrew & English Spanish & English	Ben-Zeev	1976
120	6 to 14 years	Korean, Spanish & English	Fathmann	1975A
200	6 to 15 years	Mixed & English	Fathmann	1975B
144	grades 1, 2, 3, & 10	English & Spanish (native vs non-native)	Natalicio & Natalicio	1971
46 21	elementary grades adults	Spanish & English	Ramirez & Politizer	1975
30	9 to 11th grades	Spanish & English	Hartford	1975
69	3 yrs. to adult	English & Dutch	Snow	1975
60	8, 11 years & adults	Arabic & English	Hamayan, Saigert & Larudee	1975
149	high school	English & Spanish	Tran	1972
124	16-20 years	English & French	Buteau	1970
50	adult	Czech & English	Duskova	1969
160	adult	English & French	Sodhi	1969
36	adult	Japanese, Spanish, Arabic & English	Heckler	1970

<i>N</i>	<i>Age/Grade</i>	<i>Languages</i>	<i>Investigator(s)</i>	<i>Year</i>
5	adult	Japanese & English	Linde	1971
16	adult	English & Persian	Henning	1973
356	adult	Mixed & English	Oller & Ziadhosseiny	1970
20	adult	Mixed & English	Cook	1973
73	adult	Mixed & English	Bailey, Madden & Krashen	1974
X	adult	Japanese, Spanish & English	Bertkau	1974
24	adult	Arabic, Japanese, Persian, Spanish & English	Larsen-Freeman	1975
X	adult	Mixed & English	Bailey, Madden & Eisenstein	1976
44	adult	English & German	LoCoco	1974
48	adult	English & Spanish		
50	adult	Arabic, Persian, Japanese, Spanish & English	Schachter	1975
25	adult	Russian & English	Tanka	1975
40	adult	English & French	d'Anglejan & Tucker	1975
20	adult	Spanish & English	Taylor	1975

<i>N</i>	<i>Age/Grade</i>	<i>Languages</i>	<i>Investigator(s)</i>	<i>Year</i>
423	adult	Mixed & English	Kempf	1975
18	adult	Spanish & English	Perkins & Larsen-Freeman	1975
28	adult	English & Spanish	LoCoco	1976
10	adult	Japanese & English	Dickerson	1976
6	adult	Cantonese, Portuguese, Korean & English	Tarone	1976
8	adult	Mixed & English	Robbins	1976
3	adult	Persian, Korean, Spanish & English	Schlue	1976

spontaneous speech showed almost random variation in use of such forms, Plann (1976) devised four test measures to look at the acquisition of number, gender, noun-adjective and noun-verb agreement rules by the children. Not only did the children make errors in these particular rules of Spanish, but there is little evidence of tangible improvement over the five years. That is, there is as much or more variation within each grade level as across grade levels.

Our reports on these children have emphasized the positive and impressive acquisition of the second language in global terms, measures which closely parallel those for the St. Lambert project. Global measures show that they are able to function extremely well in their second language. But such measures do not and cannot reveal problems with particular grammar structures nor do they reveal the degree of variation in performance among children within the program.

On the other hand, studies of children in East Los Angeles tend to stress the language problems of Spanish children who receive their education in English. Their problems with subject-verb agreement (*he sing* for *he sings*), possessive markers, etc. are "well known," and there is concern that remediation programs be used in order to help them "become proficient in English" or to allow them to "achieve in reading skills." In this case, global measures have not been used and the truly impressive language acquisition of the children has been overlooked. Since discrete testing is done, the morphology problems of these second language learners have been stressed.

A number of researchers in the cross-over programs are becoming concerned that the language that the children speak (whether French in the Canadian projects or Spanish in the Culver City project) may be developing into a "classroom dialect" of that language. That is, the non-standard forms of case, number, gender that they use are constantly reinforced by the speech of their peers. The same is true of the language used by many Spanish speaking children who are attending classes where instruction is in English. The speech samples from many of these schools look much like that which, for Los Angeles at least, is called Chicano English.

Secondly, global measures do not allow the unsophisticated reader to see the amount of individual variation within groups. Unfortunately, cross-sectional studies share this failing. Of course, statistical test procedures require that variation between groups be larger than variation within groups in deciding whether differences are meaningful. But it is really crucial that we know the variance on scores either in terms of standard deviations or standard error scores. This kind of information for both controls and experimental groups must be displayed along with group means. In addition, in many studies we need to know how many children in each group have not been tested because they are recognizably "immature" or because they simply do not respond well to the training session before testing begins

and are therefore dropped from the experimental or control group. Finally, it is also important that we have some notion of the reliability of the child's performance. Whenever possible, test/retest score comparisons should be given. I only mention these problems because I am concerned that important information is being lost in both global and discrete testing. It is important that we locate children who do not learn second language easily and well. It is important that we locate children who do. Unfortunately, longitudinal studies aren't much more help in this area since we tend to drop subjects who do not show immediate progress because, naturally, we fear that we will end up with a collection of empty tape reels and nothing to report. Nevertheless, as Adams (1974) has pointed out, we want as much (if not more) information on the shy, noncommunicative child as we do on the super-verbal one. With the exception of Young's (1974) study of Alma, a six-year-old Spanish child who appeared to be a true non-learner of the second language, we have little data on variation at the extreme ends of the learning scale. There are, in other words, children who *do not* learn second languages easily and those who *do* regardless of what the program of instruction is like. Again, we have no information about which, if any, of such children would profit from language instruction, but that is a possibility which deserves research.

Arguments that favor programs which use the language as a medium of instruction for subject-matter courses do not, of course, rest entirely on global measures. Tucker has pointed out that considerable research has been done which shows that children do not really need instruction in order to learn a second language. Much of that research involves cross-sectional studies which have compared first and second language learning.

Let me trace the research as briefly as possible. First language researchers (Brown, 1973; Cazden, 1975) worked out a methodology which could establish the order in which certain morphemes of English were learned by children for whom English is a first language. These morphemes included (in longitudinal order): (1) present progressive, (2.5) preposition *on*, (2.5) preposition *in*, (4) plural, (5) past irregular, (6) possessive, (7) uncontracted copula, (8) articles, (9) past regular, (10) third person regular, (11) third person irregular, (12) uncontracted AUX, (13) contracted copula and (14) contracted AUX (see Table 3 on page 78). Since the order was based, necessarily, on a small number of children, deVilliers and deVilliers (1973), then, ran a cross-sectional study to validate the data for larger numbers of children. That is, instead of tracing the order of acquisition by observing a few children over a long period of time, they examined spontaneous speech data of 21 children aged between 16 and 40 months for the accuracy of their use of these same morphemes. The accuracy order correlated highly with the order found in longitudinal studies.

Hakuta (1975) used the Brown (1973) methodology in his longitudinal study of a child learning English as a second

language and found that while the data shared many similarities with Brown's first language data, the order of acquisition for the morphemes was not the same for his subject. He has discussed the differences in order in terms of first language pressures and a number of other variables. See Table 3 on page 78.

Dulay and Burt (1976) undertook a series of studies using the 1973 deVilliers and deVilliers cross-sectional methodology. They found a much higher agreement on the accuracy order of these morphemes for first and second language learners. They attributed the differences to greater cognitive development of the second language learner (that is, the children who were tested were much older than the first language learners with whom they were compared). To show that the differences could not be accounted for by first language interference, they compared children from two different first language groups (Spanish, Chinese) and found that the accuracy orders for these two groups were almost perfectly correlated (rank order correlations varied from +.95 to +.96).

On the basis of their research, Dulay and Burt (1976) felt confident that the order of acquisition was not subject to first language pressure and, consequently, felt that contrastive analysis and instruction based on its predictions could be of little value to bilingual education. They then proposed a modified $L_1=L_2$ proposal, the creative construction hypothesis, that, while there may be slight differences in the order in which first and second language learners acquire various morphemes of English, the basic process is the same. That is, the learner is quite capable of acquiring his second language much in the same manner as he acquires the first, he creatively constructs his new language. And, they suggest, the creative construction of a new language can best be promoted by using it as a medium of instruction.

A similar accuracy order was next found in data collected on adult learners by Bailey, Madden and Krashen (1974) and by Larsen-Freeman (1976). The problem was now whether or not to argue only for the creative construction hypothesis or also to accept the pedagogical implications, which Dulay and Burt (1976) had drawn, in the case of adult learners as well.

Two new possibilities were presented. The first was the finding that the order of acquisition could as easily be interpreted in terms of frequency of the particular grammatical forms in the language spoken to the learner. We found, for example, that the frequency of questions addressed to a child second language learner exactly paralleled his acquisition of the same question forms. That is, the child was literally (though not intentionally) barraged with "what's this" questions and *where* questions in the early data sessions. *Why* question appeared very late in the sessions. The frequencies of all question forms addressed to the child over a five-month period were then tallied and compared with the order in which each question was then used by the learner. The child produced *what* questions first, then

Table 3

Examples of Brown's 14 Morphemes
(from Hakuta, 1974)

Morpheme	Example
Present Progressive	My father is <i>reading</i> a books.
Preposition <i>on</i>	Don't sit <i>on</i> bed.
Preposition <i>in</i>	Policeman is hiding <i>in</i> Kenji's shoes.
Plural	My hands <i>is</i> dirty.
Past Irregular	She <i>came</i> back.
Possessive	My father's teacher.
Uncontracted Copula	Kenji <i>is</i> bald.
Articles	She's <i>in</i> a house. Gimme <i>the</i> playdough.
Past Regular	The policeman <i>disappeared</i> .
3rd Person Regular	This froggie <i>wants</i> more milk.
3rd Person Irregular	She <i>has</i> mother, right?
Uncontracted AUX	We <i>was</i> waiting in your door.
Contracted Copula	She's <i>in</i> a moon.
Contracted AUX	She's <i>eating</i> a money.

where questions, *can* questions, *whose* questions, etc. and *why* questions came in very late. Obviously frequency in the input was important.

Larsen-Freeman (1976) then looked at the accuracy order obtained in the various cross-sectional studies on the morphemes discussed earlier and found that frequency, *alone*, was the most powerful explanation of the accuracy order for second language learners. She also found that the order shifted depending on when the learner was tested, showing that in early testing errors show up which could be predicted on the basis of contrastive analysis. She also noted that Hakuta's (1975) longitudinal order

of acquisition reflects early acquisition where contrastive analysis might have much more to say about the acquisition order. The problem in comparing these findings with those of Dulay and Burt (1976) is that we have no way of knowing how much exposure the children in their large cross-sectional population might have had to English.

The data from these studies do not necessarily argue against the creative construction hypothesis. That is, we still believe that children do creatively construct their new language. The difference is that the input must be recognized as the data which the child has to work with in that construction. It is not surprising then that his morpheme acquisition or accuracy order is correlated to the input frequency of these forms. The important difference is in the pedagogical conclusions that we might wish to draw from such studies.

A second possibility is that adults, even though they show a similar order, actually learn in different ways than the child, or that, because of their advanced cognitive development, can better profit from instruction. This position has been suggested by Krashen (1976A) in his reformulation of the optimal age hypothesis in what he has termed "Monitor Theory." While the age variable is only briefly presented in Tucker's paper, the optimal age hypothesis is an important issue which bilingual education cannot ignore. The folklore of our field has convinced most people that language learning is assured for the young child and becomes increasingly difficult with age. Certainly, the few longitudinal case studies of adults learning second languages without instruction could hardly be interpreted as records of fantastic language development. On the other hand, case studies also suggest that language learning is not that easy for all children, that the child employs many of the same avoidance strategies as the adult, that he too suffers language and culture shock, but that the child has little chance of successfully avoiding the task for long unless his parents become alarmed and either enroll him in a school where only the first language is used (and where outside contact with the second language is minimal) or return to their homeland.

The data, however, do not completely support "the younger, the better." The Cazden et al (1975) study, for example, found that the 10-year-old subject did better than any other in their group, a finding which agrees with much of the FLES research that argues that the older child is a more efficient language learner than the lower elementary grade child.

The Snow and Hoefnagel-Hohle (1975) study, comparing learners across a wide age range from preschool to adulthood, suggests that adults do learn languages as well as children, but that learners at different age levels appear to excel in different language skills.

It will be of especial interest to follow study of late immersion vs. early immersion treatments which Bruck, Lambert and Tucker (1976) have undertaken. The first report on children who

studied French as a second language during elementary school and then took a one-year French immersion program at grade seven does show interesting differences between this alternative and the program which uses French as the language of instruction from kindergarten on. A wide battery of tests are being given to children in this alternative program but until further study has been done, they feel it is premature to talk about the advantages and disadvantages of this new alternative.

The evidence from studies on learners of different ages along with a review of the literature in neurolinguistics has led Selinker (1975) to suggest that if the optimal age hypothesis is to be saved at all it must be revised in terms of multiple optional ages; that is, there would have to be different optimal ages for different language learning skills. This seems sensible since language learning is not a monolithic process. Certainly planners ought to be aware of the possible gains and costs of introducing the new language into the curriculum at various age levels.

The cross-sectional research, then, again supports the information that Tucker has presented on the child's ability to develop overall language skills. It also underscores the need for caution which Tucker has expressed. Global research cannot reveal the areas of difficulty children have with specific grammatical structures of the language unless the measures are designed with that in mind. It cannot show us the variation of learning speed for individual children, nor do we have any further information from this area which could show us how much worse or how much better children might do who have had formal language instruction.

SWITCHING AND MIXING RESEARCH

Another area of research we might want to look to for supporting evidence for Tucker's position paper is that of language mixing and switching. In the earliest studies of infant bilingualism the "one person-one language" principle was an important issue. That is, the child was thought to develop separate language systems if he was spoken to consistently in one language by one person and another language by another person. Ronjat (1913), for example, spoke only French to his son while his wife spoke only German. The child also had a good deal of contact with both languages in his environment. Leopold (1939-49), in his classic study of his daughter Hildegard, also consistently spoke German to her while her mother spoke English. However, in that case, depending on which country they were in, one or the other language received much more use. The outcome of the two studies is different, but neither child developed the ability to mix and switch languages since nobody with whom they had contact switched back and forth between the two languages.

This difference also shows up in the programs which Tucker has described. While the children in cross-over programs do mix

languages, it seems to be a developmental phenomenon. That is, in kindergarten, students in the Culver City program began "speaking Spanish" by using Spanish lexical items in their English responses to their teacher. As they progressed, more and more Spanish was used and fewer and fewer English lexical items appeared. They appear to use English vocabulary items only when they cannot remember or do not yet know the Spanish equivalent. The children, at least in this one project, do not use Spanish in their English conversations. They have not developed a way of mixing the two languages for a variety of sociolinguistic purposes (what has frequently been termed "tone") as do fluent bilingual children in many bilingual programs. Data from the Redwood City program, a program Tucker has presented in his discussion, shows that the children do use language mixing and switching but with varying degrees of effectiveness. Roberta Cohen's (1976) study of Puerto Rican children in a bilingual program shows even more effective use of switching and mixing. Certainly the most effective use of this mixed code is that shown in Chicano poetry.

Table 4
Observational Studies of Language Switching and Mixing

<i>Developmental</i>		
Cathcart	English-Spanish	Children
Leopold	English-German	Child
Imedadze	Russian-Georgian	Child
Oksaar*	Swedish-Estonian	Child
Shapira	Spanish-English	Adult
Butterworth	Spanish-English	Adolescent
<i>Fluent Bilinguals</i>		
Adams	Spanish-English	Children
Cornejo	Spanish-English	Children
R. Cohen*	Spanish-English	Children
Uyekubo*	Japanese-English	Children/Adults
Lance*	Spanish-English	Children/Adults
Holm & Holm	Navajo-English	Children
Ramirez & Politzer*	Spanish-English	Children
Rubin	Guaranai-Spanish	Adults
Hasselmo	Swedish-English	Adults
Barber*	Yaqui-Spanish-English	Adults
Rayfield*	Yiddish-English	Adults
Labov*	Spanish-English	Adults
Gumperz & Hernandez*	Spanish-English	Adults
Clyne*	Various German	Adults

*Studies in which switching and mixing are the primary focus of the report.

Educators are, of course, not certain whether they believe the skilled use of two languages in a mixed code should be promoted as one of the highest forms of language use or discouraged at every opportunity for fear that the children will eventually be unable to use each of the languages separately in monolingual situations or that this skill might be somehow negatively correlated to other language skills such as reading or writing (an issue addressed by the recent Ramirez and Politzer [1976A] paper).

I, myself, have not had a chance to look at enough data from this area of research to know what the effects might be, but certainly it is another kind of data that should be considered in program planning. I am, admittedly, prejudiced in favor of language mixing since I am from a family of mixers, but I am impressed by the examples cited in Lance's (1969) research which show the skill child bilinguals possess in using the two languages so effectively for within-group conversation.

CLASSROOM DISCOURSE ANALYSIS

An analysis of child bilingual conversations, child-child conversations and adult-child conversations can tell us much about language learning in noninstructional situations. Yet it appears to me that if we wish to say anything about the effectiveness of different programs--whether cross-over programs, straight ESL instruction classes or bilingual programs (in all their many varieties)--the absolute minimal information we must have is not only a clear, concise description of each program, but also a clear picture of language use in the classroom.

First we need information on programs, goals, students, teachers and aides, materials, ratio of time in each language, etc. We need clear descriptions of program types such as that outlined for us by Tucker or as described in the surveys prepared by Padilla, Wagner-Gough, Amaro-Plotkin and Amodeo (1975) for the Office of Child Development. Second, we need formal surveys of language instruction programs and regular subject matter instruction classes in terms of overall discourse activities. Do ESL programs really do modeling plus repetition, drills and expansions? If not, exactly what kinds of activities do they use? How do these contrast with subject matter classes? Third, we need detailed discourse analysis studies of classroom exchanges. A beginning in this direction is the work being done in first language classes by such people as Cazden (1975), Sinclair and Coulthard (1975), and for second language classes by Allwright et al (1976).

Once we have that kind of information, we can begin to look at which kinds of procedures might work best in promoting

language learning. One way to do this is to compare further the discourse of the classroom with that of child-child conversations. It has, for example, been widely claimed that the best second language learning environment is that of the child learner playing with a child native speaker (language learning on the playground). We have laughed at the naiveté of repeat-after-me language teaching programs yet the data from Young (1974) and from Peck (1976) show that child-child discourse has, as one of several major patterns, the use of extensive repetition. The children in many of the observational studies take their turns as conversation partners by repeating or "joining the chorus" (Peck, 1976):

Child-Child conversations during puzzle-working activity.

NS: ...lemme have it. Lemme have it XXX puzzle. Oops!

Angel: (laugh) lemme have (scream)

NS: Nope. But it goes here.

Angel: Here. Goes.

NS: ...and that's one more like it.

Angel: (laughs to himself) 'smore like it.

NS: Really more like it.

NS: Lookit how much we've done so far so good.

Angel: Lookit all--(sings low) far so good-good-good.

(speaking) good, good, good, good.

We might want to look at the strategies that the learner uses in order to take turns in conversations (for a beginning, see Hatch, 1976) and then compare these to the kinds of activities used in classroom discourse.

It may, of course, be that none of these strategies really promote second language learning, but at least such an investigation might have much more to say about what kind of program might be effective for the promotion of language learning. While there are no results to report from this area of research, I believe it may be the most promising area in establishing claims of program effectiveness. It is the most promising because it should have the most to say about how programs differ. This is important if the issue is not to become one of simple frequency of exposure to the new language.

THE FREQUENCY ARGUMENT

It appears that one might argue that program effectiveness is a simple matter of frequency. In Luckier's report, frequency can be cited as the major variable. That is, one does not have to talk in terms of a creative construction hypothesis or even formal vs. no formal instruction in explaining the major findings.

This appears to be true in the findings for all three types of programs which Tucker has described.

Clearly students in cross-over programs receive much more exposure to the second language than do students in French or Spanish as a second language program. One would expect them to be better in the new language than students who only receive formal language instruction for an hour or two a day. Secondly, it was found that children in the Redwood City bilingual program do not perform as well in English as students who receive all their education in that language. Again, the difference could easily be one of frequency. Students in the Philippines who receive the most exposure to English do best in tests of English ability. Again, frequency.

The "residual" problems which children in language-switch programs have can also be explained in terms of frequency. Initially such things as gender in Spanish or French or subject-verb agreement are not learned by the children partly because they have so little communication value. That is, the child will be understood whether he says *la casa* or *el casa*. While the teacher or aide will continually provide a correct model, the child has the input from all the other children around him to attend to as well. Not only are there more people saying the incorrect form, but he is more likely to talk more with his peers than with his teacher.

In addition, while children in such programs do continue to develop their first language skills, one still finds that these statements are qualified. For example, Tucker quotes Swain (1975) as saying that students continue to develop first language proficiency with some exceptions where specific skills *have not been taught*, or that they do very well *considering the limited time devoted to formal school instruction*. The results from the Redwood City program also seem to show some skills might be promoted by formal instruction.

The problem is that we have, perhaps, overstated our case on the importance or lack of importance of formal instruction. Programs which show success may attain success simply because of the frequency and/or intensity of exposure to the language rather than to the use of formal language instruction or the lack of it. In addition, it may well be that certain skills can and should be improved via formal instruction.

SUMMARY

What, then, can we learn from these four areas of research that might promote equal facility in two languages if, indeed, that is the goal of the linguistic components of bilingual programs. While it is true that young children can learn a second language when it is used as the medium of instruction, we are still not certain that is the best way to attain equal facility in both languages. Qualifications have to be drawn that we do not have solid evidence that the child will, in fact, attain

true proficiency in the second language and it is not clear that he will not need instruction in certain language skills for his first language. The evidence seems to suggest that he will not attain native-like proficiency in the weaker language unless he has sufficient exposure to peer models as well as teacher models in that language.

On the other hand, we do not have evidence that second language instruction is a better alternative. Ann Fathman (1975A, 1975B), in her evaluation of ESL instruction in two reports shows that children, already in schools where English is the primary medium of instruction, do not seem to benefit greatly from extensive ESL instruction. Her studies seem to suggest that language instruction is not the answer. (Another possibility is that these two studies are an additional argument in favor of frequency--that is, it doesn't matter what you do in a classroom, rather what is important is that progress will take place if there is as much exposure to the language in one class as in the next.) On the other hand, Naiman et al (1975) suggest that the best way to learn a new language might be for the learner to be simultaneously immersed in the language and receive structured formal instruction. On the basis of adult accounts of personal success/failure in second language learning, a combination of the two seemed to be most productive.

I agree with Tucker that communities should articulate their own program goals. But, if those goals include "equivalent proficiency" in the two languages, then I believe that instruction in both languages will be necessary. The research shows that *without instruction* the student is likely to have weak areas (quite different areas) in each language. The global evaluations, the longitudinal case studies, the experimental cross-sectional studies all are quite specific in locating those areas for us. It makes sense, then, to ask whether the outcome might be different *with instruction*.

Traditionally researchers always conclude by asking for more research. But what kind of research can best give community planners the information they need for the language components of bilingual programs?

If "functional" use of the two languages is the goal of such programs, then we will, as Tucker has suggested, need to work through all the possibilities that the learner might need for each language, and discover what standards are necessary to attain functional use. Functional use may not require that one spell the language correctly, it may not require that one use correct gender-adjective agreement, it may not require that one progress past the "he no want" stage in forming negatives, it may not require one to read with even a quarter of the speed in one language as in the other. Yet, even if that is the case, we have no notion of how quickly and well a learner might reach these goals *with instruction*.

Finally, it is not clear what "instruction" means. What kinds of classroom activities are we talking about and how do

these differ from what happens during the rest of the day? What kinds of materials development projects have been going on for the past few years? Are those based on speech acts (e.g., the San Mateo Project) more productive than those based on isolated structure practice or than those based on contextualized structure practice? Obviously, all materials are not suited to all children. What kind of research is being done that might tell us what kinds of materials seem to work best with children who use particular learning strategies? How skilled is the teacher at matching materials and learner? Or, are all schools locked into one methodology for all students in their programs? It seems to me that detailed classroom discourse analysis, classroom observation in both formal language classes and in other classes, and materials evaluations would be most productive. This could then be integrated with that presented by Naiman et al (1975) in their survey of good learners and good teaching, and with the information on social and psychological distance factors such as that given by Schumann (1976) and by C. B. Paulston (1974). Surely social and psychological factors have more to say about variance within age groups and successful language learning across age groups than anything else. However, continued research in classroom discourse analysis, cross-sectional experimental research, and individual case study research can also contribute much of value to planners of bilingual education programs.

Research

What is the influence of schooling children in an L₁ and/or L₂ on their language acquisition and subject matter knowledge? Part I of this paper reacts to Tucker's paper which deals with this question. Part II examines some additional evidence concerning the points Tucker raised, raises some further questions and looks at what evidence we have for answering them. Appendix B presents the findings of dissertations, additional to those discussed in Part II.

PART I

This section was written with June Belkin, Janet Roth Graham and Elaine Williams.

My first reaction to Tucker's paper is that it is not a linguistic review paper. Certainly the paper deals with linguistic aspects of bilingual education where *linguistic* is the adjective of language, but I see no aspects of it which emanate from the core of the discipline of linguistics as I know it. There are questions relevant to bilingual education which belong in linguistics although these constitute a minority. I am thinking of some of the studies on semilingualism, language dominance, language proficiency and proficiency testing, bilingual language acquisition, error analysis and interlanguage although certainly non-linguist scholars also deal with these topics. It would be rather ludicrous to criticize Tucker for not being a linguist and that is not my intention; I merely want to record my reaction that I don't find the paper representative of the state of the art of linguistic research nor characteristic of the linguistics

Author's Note: For Sarah Kathryn Billingsley whose constant if yet unborn presence during her mother's typing of the manuscript reminded me anew of our responsibility to coming generations of children.

perspective. Having said this, I must go on to affirm my own bias which is that I don't think the important questions about bilingual education come from a linguistics perspective. However, linguistics has important contributions to make in implementing bilingual education programs, in materials preparation, curriculum development and teacher preparation. Since these topics lie outside the scope of Tucker's paper, I will not discuss them.

The reason I don't find a framework of linguistic theory very helpful in formulating questions and finding answers about bilingual education is simple. As Bowen (n.d.) says, "it is not strictly a linguistic problem." Bilingual education is the result of societal factors, and unless we attempt in some way to account for those socio-historical, cultural, and economic-political factors which lead to certain forms of bilingual education, we will not be able to understand or assess the consequences of that education. One cannot give linguistic answers to social problems. However, as Swain rightly points out:

The reason bilingual education has been the independent variable is because educators, parents, etc. were worried about the possible harmful effects of bilingual education on their kids. The *evaluations* of the programs were undertaken to show that bilingual education was not harmful. In other words, research for immediate educational purposes necessarily have used bilingual education as the independent variable. Now if you want to develop a theory of bilingual education...then you have to take one step backwards (no negative connotation meant) and view bilingual education as the/a dependent variable--which is of course what you have done. But in all fairness to the studies you refer to, you might acknowledge that they never aimed at developing a theory of bilingual education, they only aimed at evaluating a particular education program. (Cited in Paulston, 1976)

Tucker's paper deals in masterly detail with three such program evaluations, and his paper is notable for its objectivity, not a major characteristic of the literature on bilingual education. It should be pointed out, as Macnamara (1974) and Mackey (1972) have done, that such research which treats the bilingual programs as the independent variable, i.e. as the cause of certain behaviors in children, carry in and by themselves little generalizability to other programs. But I accept as a legitimate fact that parents, educators and legislators want to know how the children are performing in school and that their first question concerns the children's linguistic skills. Also, we need a great number of case studies in order to develop a theory of bilingual education which will allow us to generalize the evidence from the individual studies and to account for the contradictory findings.

Tucker begins with a discussion of language learning theories and methods and goes on to discuss the shortcomings of the

traditional language teaching programs in American and Canadian settings. If we define method as adhering to the traditions of grammar-translation, direct method, audiolingualism or cognitive code, respectively, I think method of language teaching had very little to do with the results. To illustrate, I was taught English by grammar-translation, a method held in low esteem, but I learned English from contact with English speaking friends with whom I wanted to communicate. Tucker is right that something is wrong, if after 12 years of studying French, anglo Canadians cannot carry on a simple conversation, but the fault does not lie in the school.

As a matter of fact, I don't think methods of language teaching are particularly important in the settings Tucker is discussing. Furthermore, if one visits the classrooms, it is difficult to identify which particular method the teacher is following--for teachers tend to be eclectic (from an empirical rather than a theoretical base) in their methods and idiosyncratic in their eclecticism.

I can label the language teaching in the French immersion classes I have visited as direct method, but this is useless in telling me anything about the teaching, especially as I might assign the same label to the teaching of English to Chicano Spanish speaking children in a traditional southwest U.S. school (submersion classes, in Wallace Lambert's terms). Yet the difference between the programs is one of night and day.

Rather than look to method, there are two other aspects of the programs I think account for the results, or lack of them, as the case may be. The first aspect, and I am perfectly aware I sound simplistic, is *good* as compared to *bad* teaching. This paper is not the place for an extended discussion of good teaching (see Saville-Troike, 1976), but I have such elements in mind as teacher expectations, motivations for learning, the children's possibility of success in undertaking a task, classroom atmosphere, and above all, the crucial necessity that the children always understand what they are expected to do.

What the direct method, the audio-lingual method and the cognitive code method all have in common is the recognition that they are in fact teaching a language foreign to the child. They all proceed in an orderly progress where the language content is structured. All staff who have worked with monolingual classes in an L₂ claim that this is necessary....The methods of structuring seem to play less a role than the structuring itself. (Paulston, 1974)

It is along these lines we see the difference between the Canadian immersion classes and the United States submersion classes rather than in any particular method.

The second aspect of the programs is one that Tucker also mentions: The necessity to structure the environment (in or out

of school) so that the children use the language for a purpose other than as an end in itself. Of course the anglo Canadians didn't learn French if they did not associate with francophone Canadians--never used French for communicative purposes. Swedish children (or at least many of them), who no doubt methods-wise are no better taught than the Canadian children, do learn English because it is the lingua franca of Europe and although they don't use it in the classroom, there are many opportunities to do so outside in situations in which they want to participate. Lewis' data (1972) demonstrate clearly that the Soviet children don't learn Russian unless Russian is used as a medium of instruction and not only as a subject in itself. The Canadian immersion programs support that point as well. One can also, as we do in the English Language Institute, incorporate communication as a component of the language teaching methodology but it needn't be done that way. What is necessary is that there is a will and a way to use the language for purposes of communication (Krashen, 1976B). The will and the way are very much influenced by social factors.

Tucker states that one of our greatest challenges is that of "providing effective second language teaching within the context of the public school system while simultaneously nurturing the native language development and socio-cultural traditions of heterogeneous student populations." Tucker makes that statement as a logico-deductive claim, and I don't think he later presents any data to really support it. It is an important claim, at the heart of bilingual education, and I would like to discuss some data which do support it.

Nobody questions the necessity to learn the official language of a nation. Rather it is the nurturing of the native language which has been the moot point in the U.S.

The arguments in favor of the mother tongue, when they are not political claims stated in terms of ethnic solidarity--as valid an argument as any--usually involve claims of more efficient learning of reading (Engle, 1975; Paulston, 1974) and of the second language. As is clear from Tucker's later discussion, the research findings are not unequivocal on the subject, and, as I have argued in an earlier paper (1976), such disparate findings are a function of the social situation and the ethnic relationship between the superordinate and subordinate groups. Still, around the United States, I am asked by laymen (state officials, school principals) who have to implement bilingual programs for linguistic evidence to support or refute bilingual education. I think their question whether bilingual education programs will be more effective in teaching the children English is legitimate, and I have little doubt that most of them really have the children's welfare at heart. The response that there are disparate findings as a function of the social situation they regard as academic waffling when all they want is a yes-no answer. Such an answer can be found in the Finnish National Commission Report to UNESCO (Skutnabb-Kangas and Toukomaa, 1976) which gives a simple

affirmative yes in favor of mother tongue nurturing. Sweden has a large Finnish working class migrant population with an estimated 30,000 children in the public schools (Johannesson, 1975). They are subject to stereotyping and prejudice by the Swedes: "The Finns seem to be the object of more groundless prejudices on the part of the Swedes than any other nationality (Trankell, 1975)." Fewer Finns learn Swedish than any of the other immigrant nationality groups. They are characterized by identity conflicts and lack of self-esteem, shame about their own language and nationality (Skutnabb-Kangas and Toukomaa, 1976)-- characteristics which are frequently mentioned in the literature on minorities in the U.S. The data on the Finnish children in Sweden are particularly significant because both the receiver country and the sender country are highly developed, industrialized, modern societies with school achievement norms for children in both Sweden and Finland. In addition, Sweden is a quasi-socialist society where problems of health-care, diet and unemployment are not intervening variables. Such conditions are often cited as contributory factors in the lack of school achievement by minority group children.

In the UNESCO report, Skutnabb-Kangas and Toukomaa (1976) report on a study in which 687 Finnish students in Swedish schools, divided among 171 classes, were tested:

The purpose of the study was to determine the linguistic level and development in both their mother tongue and Swedish of Finnish migrant children attending Swedish comprehensive school. Above all, attention was paid to the interdependence between skills in the mother tongue and Swedish, i.e. the hypothesis was tested that those who have best preserved their mother tongue are also best in Swedish. Partly related to this question, the significance of the age at which the child moved to Sweden was also determined. Do those who received a firm grounding in their mother tongue by attending school in Finland have a better chance of learning Swedish than those who moved to Sweden as pre-schoolers?

A second important problem is the achievement of Finnish pupils in Swedish language schools. How do Finnish migrant pupils do in theoretical and what might be called practical subjects? Does one's skill in the mother tongue have any effect on the grade given in a Swedish-language school or on other school achievement?

In their discussion of adults, the authors also report on several other studies which support their findings. The results were compared to Swedish and Finnish control groups, or standardized tests were used. Social class seems not to have been controlled for, and this should be taken into account in interpreting the

findings. In 1970, the upper class counted 7.8 percent of the population, the middle class 34.7 percent and the working class 57.5 percent (Svenska Dagbladet, 1970).

On all nonverbal ability factors the migrant children tested out at normal or slightly above normal level, i.e. they consistently test out at a normal level of intelligence. Between verbal and nonverbal factors, however, there is an "enormous gap." "During the first 4-5 years of school the Finnish migrant pupils ...remained at a level which in Finland had fewer than 10 percent of the poorest pupils judged in verbal tests (Skutnabb-Kangas and Toukomaa, 1976)." In other words, their Finnish is poor and so is their Swedish where "the average level Finnish pupil had a test point score in Swedish on a level at which about 10 percent of the poorest Swedish pupils were placed."

At first glance, it doesn't make sense that the Finnish students' Swedish would be good enough to compare with the Swedish of 10 percent of native speakers. However, the tests used to assess Swedish skills were synonym tests, word group tests and vocabulary tests--tests which we know correlate highly with I.Q. scores. Since the nonverbal ability factors established the Finnish students to be at normal level, the verbal tests would have tested the Finnish students' knowledge of Swedish while the same tests in all probability tapped the Swedish students' intelligence. Whatever methodological objections one might make, it is still clear that 687 Finnish students of normal intelligence were only able to function through Swedish as the least intelligent 10 percent of Swedish students--with perfectly predictable results in their schooling.

The language development data are supported by findings from a study by Särkelä and Kuusinen (1975) who tested 182 subjects in Sweden with a rural control group in Finland. The migrant children were slightly more above average as measured by the nonverbal Raven intelligence test. "On the other hand, the psycholinguistic ages determined by the ITPA (Illinois Test of Psycholinguistic Abilities) show that in their command of the Finnish language the pupils in Finnish-language classes in Sweden were on average 2.5-3 years behind the normal Finnish level and the Finnish pupils in Swedish-language classes were 3-4 years behind the normal Finnish level (Skutnabb-Kangas and Toukomaa, 1976)."

In general Skutnabb-Kangas and Toukomaa found that the children's rate of improvement in Swedish was not as fast as the regression in the mother tongue. Although ability factors influenced the learning of Swedish, it is very clear "that the better a pupil has preserved his mother tongue, the better are his prerequisites for learning the second language (Skutnabb-Kangas and Toukomaa, 1976)." Overwhelmingly, the better a student knew Finnish (as a function of having attended school for several years in Finland), the better he learned Swedish. An examination of language skills of siblings found that those who moved from Finland at an average age of 10 have preserved an

almost normal Finnish language level, and they also approach the normal level in Swedish of Swedish pupils. Those who moved at the age of 12 also achieve language skills comparable to those of the Swedes although learning the language takes place more slowly. The children who moved under the age of six, or who were born in Sweden, do not do as well. Their Swedish language development "often stops at the age of about 12, evidently because of their poor grounding in the mother tongue." Worst off are the pupils who were 7-8 when they moved to Sweden. "The verbal development of these children, who moved just after school was beginning (children begin school at seven in Sweden), underwent serious disturbance after the move. This also has a detrimental effect on learning Swedish (Skutnabb-Kangas and Toukomaa, 1976)." The evidence is perfectly clear that mother tongue development facilitates the learning of the second language, and there are serious implications that without such development neither language may be learned well, resulting in semilingualism.

Bloomfield cites such a condition as common among the Menomini (1927),* and Hymes in a discussion of White-Thunder cites John Murra as commenting on a similar situation among Quechua Indians who "so to speak, give up Quechua before they learn Spanish (Hymes, 1974)," an accurate enough description of semilingualism. Gonzales-Moreyra and Aliaga's (1972) study in which bilingual Quechua children achieved lower test scores on concept formation tasks than did two control groups of children monolingual in Spanish and Quechua, respectively, supports the Finnish findings, as I will shortly discuss. On the other hand, Collison's (1974) study on the concept formation of Ghanaian children, which is frequently cited as evidence for weaker concept formation in the L₂, I think only reflects language proficiency and gives no evidence of concept formation. But his subjects obviously are fluent in their mother tongue, and the study neither supports nor refutes the evidence on semilingualism.

Cummins (1976), in his important article, speculates that the lower level of verbal intelligence by the bilingual subjects in the earlier studies (Darcy, 1953) "may be a reflection of the fact that they are likely to have had less than native-like competence in both their languages." Cummins' hypothesizes that "the level of linguistic competence may mediate the effects of his bilingual learning experience on cognitive growth."

In other words, the bilingual's level of competence in L₁ and L₂ is posited

as an intervening variable in the causal chain between cognitive development and more fundamental social, attitudinal, educational and cognitive factors.

*Note that Bloomfield used the term semilingualism which is an English translation of the Swedish term *halv-språkig* coined in the late fifties by Nils-Erik Hansegård.

Specifically, there may be a threshold level of linguistic competence which a bilingual child must attain both in order to avoid cognitive deficits and allow the potentially beneficial aspects of becoming bilingual to affect his cognitive functioning. Bilingualism and unilingualism can both be thought of as instruments which individuals use to operate upon their environments. Because of its greater complexity, the bilingual instrument is more difficult to master, but once mastered has greater potential than the unilingual instrument for promoting cognitive growth. (Cummins, 1976)

A last look at the Finnish data supports Cummins' conclusions, I think. In an examination of the school achievement of the Finnish students, it was found that they did relatively well in upper level mathematics--almost as well as their Swedish classmates. But more interestingly,

The Finnish-language skills shown by the test results are fairly closely connected with the grade in mathematics. In the upper level, Finnish seems to be even more important for achievement in mathematics than Swedish--in spite of the fact that mathematics, too, is taught in Swedish. This result supports the concept that the abstraction level of the mother tongue is important for mastering the conceptual operations connected with mathematics....Subjects such as biology, chemistry and physics also require conceptual thinking, and in these subjects migrant children with a good mastery of their mother tongue succeeded significantly better than those who knew their mother tongue poorly. (Skutnabb-Kangas and Toukomaa, 1976)

The evidence for the importance of mother tongue development seems to me so overwhelmingly clear, as it indeed was to the pragmatic Swedes who, in 1973, instituted a system of transitional bilingual education (Willke, 1975).

After this long detour, I now return to Tucker's paper. In the section of *implications* of the creative construction hypothesis, Tucker ignores the crucial variable of age. The young child may learn his L_2 in a fashion similar to his L_1 (although I am far from convinced of it), but no one can seriously advocate that adults not be given formal instruction. I don't think, however, there is any convincing evidence for not giving young children formal instruction in their L_2 .

Contrary to what is sometimes bruited about, the children in the Canadian immersion programs receive very careful formal instruction in French. To illustrate with an anecdote: One day when I was visiting a second grade, a little boy came up to me, said politely, as if he took for granted that all adults speak French: "Pouvez-vous m'aider, madame?" He wanted to

know if a certain word was a verb or not; if it were, he was to change the present tense verb form to the imperfect form. He had just been tricked by the *ent* ending of *souvent*, and he wanted to be sure this time. He was doing a controlled composition, re-writing a short story and changing the present to the past tense; the teaching point was the morphological verb endings of the *imparfait*, as formal an exercise in L₂ acquisition as there is.

Another episode: Nothing is more criticized these days than pull-out ESL classes, yet at a recent conference in Toronto a panel of eight tenth graders from various countries, who had immigrated to Canada four years ago, unanimously insisted in the face of determined questioning that during their first year in Canada, the most helpful experience had been their pull-out ESL classes. Maybe their experience cannot be taken as an endorsement for pull-out classes as they are practiced in the U.S., but I do think it is evidence that they found structured teaching of English more helpful than just naturally picking up the language. Furthermore, their comments are echoed by a Chicano child in a California bilingual education program, who when asked what he would like done to improve the program answered: "Que hubiera más clases de ESL para que pudiéramos aprender más (Velasquez, 1973)."

I find it potentially quite harmful to speculate that children do not need any instruction in the L₂, especially when we know so very little about child L₂ acquisition. I, for one, don't think we can draw any conclusions about language teaching from the language acquisition studies Tucker cites, and I totally endorse the cautions drawn by Tarone, Swain and Fathman (1976).

I find Tucker's discussion of the goals of bilingual education misleading from the United States viewpoint. In America, the terms *transition* and *maintenance* are used as labels for program models where the real goals are the assimilation of the ethnic minorities into mainstream culture versus the fostering of cultural pluralism. Legally, our bilingual education programs are clearly transitional in nature with the intent, by legislators, to facilitate assimilation. In practice, as Ramirez et al (1977) point out "the guidelines for the Title VII programs have been interpreted loosely enough" to allow for the existence of both models. Like Tucker, the Ramirez (1977) report stresses the need for aims and objectives to be "clarified and made explicit so that progress toward the goal can be evaluated." I don't share their concern.

The goals are clear enough to community leaders and parents who are perfectly agreed that they don't want "student indifference, underachievement, vandalism, drug abuse, and a score of other serious consequences of poverty (*Citizen Action in Education*, 1974)," and that they want jobs for the children with the school "viewed as a means to the outside Anglo culture (Wax and Luhman, 1974)." In 1971 when the Office of Civil Rights undertook its *Mexican American Education Study* only 7 percent of

the professionals employed in the school district offices of the Southwest were Mexican Americans (USCCR, 1971), and that is a situation minority groups would like to see changed.

It is a technician's mistake to want consensual goals in order to assess the efficacy of bilingual education programs. For while the parents want access to goods and services for the children with the least degree of damage to their sense of self, they will vary in their interpretation of the best means to achieve that goal.

Spolsky's (1974) *American Indian Bilingual Education* surveys the wide variety of bilingual programs and points out that "the attitudes of Indian parents and community leaders to bilingual education make up a complex patchwork of varying influences and beliefs." Fuchs and Havighurst (1972) cite Indian responses to a questionnaire: "She already knows her own language so I don't think she should be taught it in school....I think it would be worthwhile to have some subjects taught in Apache." Individual parents will differ, just as do Anglo parents, in their interpretation of the best means to achieve a useful life, and nothing else can be expected. The schools, however, do attempt to spell out goals and objectives of bilingual education, both in the form of policy papers, like the New Mexico State Department of Education's Statement of Policy--Bilingual Education (New Mexico Objectives of Bilingual Education, see Appendix A), and in the proposals for funding. Cornejo's survey of "Exemplary Programs in the Southwest" demonstrates how explicit the programs are in stating their goals and objectives, and the following from the Valley International Project (Cornejo, 1974) is typical:

Goals and Objectives

The long range goals of the Valley Intercultural Project are as follows:

1. Students from both the Spanish speaking and English speaking environments will have achieved parallel proficiencies in the use of two languages.
2. Students from both environments will willingly and capably shift languages as appropriate to the situation in which they find themselves.
3. Students from the non-English speaking environment will achieve an equal rating, on the average, to that achieved by their English speaking counterparts on scales of self-image and vocational/educational aspiration.
4. Students from the non-English speaking environment who are adapting to a new environment will do so without falling into a state of anomie and without the alienation from the

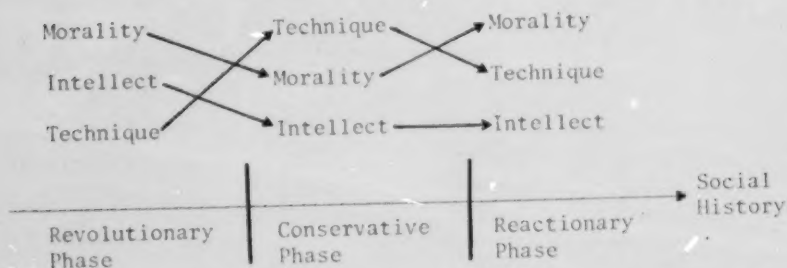
family or community often associated with "rejection of the mother tongue."

5. Students from both environments will be able to function in social and vocational settings equally well in two languages.
6. The bilingual program, articulated over five years and continued further by local districts and countries, will offer students from both environments equal opportunity to achieve academic progress throughout the school system.
7. Students from both environments will have appreciation for others' ethnic backgrounds, as well as pride in their own cultural heritage.
8. Long range participation on the part of the community will result in a composition of school-related committees more representative of the ethnic composition of the community.
9. Equal opportunity practices will be evident in the balanced number of qualified students from both backgrounds being given vocational employment.
10. Over a number of years, it is hoped that teacher stability in job careers and "career ladders" for aides will result in a highly trained cadre of professional personnel necessary for program maintenance.
11. The school system community will mirror its multicultural makeup in the services and products it provides, in the recognition of appropriate holidays; and in festivals and employment practices.

And if no one specifies level of achievement in the pronunciation of English (Tucker, this volume), "it is because no one considers it particularly important among the factors which characterize U.S. bilingual education today. English is only the means to a fair share.

Anthony Wallace (1966) has suggested the term revitalization movement for "deliberate, organized efforts by members of a society to construct a more satisfying culture." Many of the statements about the goals of bilingual education by organized members of minority groups can best be understood from that perspective. Says Wallace (1961): "But for our purposes three contrasting value orientations (for determining what is to be learnt) are most significant: the revolutionary, or utopian, orientation; the conservative...orientation; and the reactionary orientation. What a man is expected to do in his life will, in part, depend on whether he lives in a revolutionary, conservative, or reactionary society." He outlines the priorities of learning in the following model (1961).

Learning Priorities in Revolutionary, Conservative and Reactionary Societies.



Groups undergoing a revolutionary phase will always stress moral learning, and conflicts are certain to arise when a revitalization movement takes place within a conservative society where technique has the highest learning priority. The following citation from a document directed in part to the late Mayor Daley and the Chicago City Council illustrates that sense of conflict (Sevilla-Casas et al, 1973).

Our conference brought together Latinos in Chicago who have fought to establish bilingual-bicultural human service programs that are responsive to and controlled by the Latino community.

These programs were established both through battles with established institutions and by setting up alternative facilities that bypassed irrelevant institutional services. Each of these programs is staffed and controlled by Latino community residents.

These bilingual-bicultural programs are desperately fighting to stem the tide of oppression by Anglo society and institutions as seen in an 80 percent drop-out rate, poverty and urban renewal.

However, these programs are not enough. We call upon city, state, and Federal institutions:

1. To allocate a fair share of its resources to bilingual-bicultural Latino programs.
2. To insure that these programs are controlled by and responsive to the needs of Latino residents.
3. To see to it that Anglo institutions stop pressuring Latinos to become "Americanized" but recognize that our country can be strengthened by many different languages and cultures.

4. To insure that institutions serving Latinos make significant changes in their programs, resources and staff so that they can more effectively serve our people.

.....

Can anyone seriously believe that the Latinos of Chicago are concerned about their proficiency in English pronunciation? Language skills in the official language can be seen as an aspect of technique, while the mother tongue is an aspect of moral learning, reaffirming the solidarity and cultural uniqueness of the ethnic group, underscoring the need to teach the moral values of good and evil, right and wrong, the values of the old gods, in the language in which these values were originally transmitted. Reaffirmation of cultural values are frequently a part of the moral teaching, especially among ethnic groups who, prior to the revitalization movement, have been taught by the dominant group to have nothing but contempt for their own culture. The Canadian Indians in the following excerpts from the National Indian Brotherhood policy paper (National Indian Brotherhood, 1972) sound reminiscent of the Latinos:

Language is the outward expression of an accumulation of learning and experience shared by a group of people over centuries of development. It is not simply a vocal symbol; it is a dynamic force which shapes the way a man looks at the world, his thinking about the world and his philosophy of life. Knowing his maternal language helps a man to know himself; being proud of his language helps a man to be proud of himself.

The Indian people are expressing concern that the native languages are being lost; that the younger generations can no longer speak or understand their mother tongue. If the Indian identity is to be preserved, steps must be taken to reverse this trend.

The need for teachers who are fluent in the local language is dramatically underlined by this concern for the preservation of Indian identity through language instruction.

By learning ways to apply traditional beliefs, values and skills to survival in modern society, and by learning modern skills and behaviors needed to participate in the benefits of economic and social development, the Indian will gain self-confidence and independence.

These (Cultural Education) Centres must be Indian controlled and operated, in view of the fact that they are established for Indian purposes and use.

The United States National Indian Education Association echoes their Canadian neighbors: "If Indians (are) to retain their culture, we must set our own policies (*New York Times*, 1974)." The conflict over learning priorities explains the extreme importance of local control over local educational institutions, which otherwise would not be in a position to implement their objectives. And to me at least, those objectives are perfectly clear: Maintenance of cultural identity and economic incorporation (Schermerhorn, 1970) into the mainstream society. We show a typical tendency to assess and evaluate the schooling of groups undergoing a revitalization movement where moral learning is the priority in terms of the standards of the conservative society--the standards of technique.

It makes a lot more sense to assess U.S. bilingual education programs in terms of employment figures upon leaving school, statistics on drug addiction and alcoholism, suicide rates and personality disorders, i.e. indicators which measure the social pathology which accompanies social injustice rather than in terms of language skills. Many of us see the bilingual education programs as an attempt to cope with such social injustice rather than as an attempt at efficient language teaching--although the programs are that, too. One of the best indicators with which to evaluate bilingual education programs are drop-out rates. The general drop-out rate for American Indians in Chicago is 95 percent; in the city's bilingual-bicultural Little Big Horn High School, however, the drop-out rate this year was 11 percent (*New York Times*, 1976) and I find that figure a much more meaningful evaluation of the bilingual program than any psychometric assessment of the students' language skills.

My intention is not to criticize Tucker for doing what he does best, rather it is to remind us all to keep a proper perspective of U.S. bilingual education programs in our discussion of the three program evaluations Tucker discusses. As Swain (1976A) points out, "the overriding problem of any psychometric study [is that] aspects of behavior which are non-quantifiable or difficult to quantify are not considered," and she suggests the need for additional data along the same line as Spolsky (1974B) which, in my opinion, is the best approach to the subject (see also Cohen and Laosa, 1975). Spolsky systematically demonstrates the importance of the various factors involved along the linguistic, psychological, sociological, economic, political and religious-cultural parameters, all of which are necessary to consider in an evaluation of bilingual education programs. But Swain (1976A) is also right in pointing out the value of the psychometric evaluation research which looks at the bilingual education programs as the independent variable:

It can provide essential feedback to the programs themselves often resulting in program change. Furthermore, such evaluations have provided

individuals considering the implementation of a bilingual education program with information about the results of a variety of options, one of which may be applicable to their community given their own particular needs and characteristics. And finally, although a single evaluation carries little generalizability in and out of itself, "such case studies are necessary if we are to begin to develop a theory of bilingual education which will enable us to generalize the evidence from the individual studies and to account for their often contradictory findings." (Paulston, 1975)

I have gone to such length in discussing the perspective which I hold to be necessary in interpreting the evaluation research on American bilingual education programs because I will not let myself be party to encouraging lawyers and government officials, let alone academics, in thinking that the answers to their questions lie in the assessment of children's language proficiency. But, invariably, the lawyer's and the official's rejoinder is that language proficiency arguments are the only ones to convince a judge, and so we do need to consider them seriously.

Tucker is very right in expressing a need for longitudinal studies. Children do learn slower in an L₂--the St. Lambert data are perfectly clear on that--and they need time for the programs to be effective. As Ramirez et al (1977) point out, there is a danger in holding up bilingual education as a panacea for all ills, especially if great results are expected overnight. The most nonsensical study I have seen is a dissertation which evaluates the effect of bilingual education after eight (8, sic!) hours of "treatment." It needs to be pointed out that a minimum number of program years, probably around three, are necessary before any meaningful conclusions about L₂ acquisition can be drawn.

Tucker's discussion of the assessment of language proficiency I think is important, which is to say that I agree with him. The assessment of functional or communicative skill is especially important in light of the fact that acquisition of communicative ability* in the L₂ is not affected by level of I.Q. as formal aspects of language learning typically are (Genesee et al, 1974).

*Tucker uses the terms communicative skill and communicative competence interchangeably. I would make a plea for using communicative skill or communicative ability when we are simply referring to a knowledge of language which enables the speaker to get his message across and so reserve the term communicative competence for Hymes' (1974) sense of the term to include not only linguistic competence, but also a social knowledge of appropriate use.

The many evaluation research studies in the United States-- and elsewhere--are not always notable for the excellence of their research design and data analysis, and it is understandable that as an outstanding program evaluator, Tucker has chosen studies of high quality which he can feel comfortable in discussing. But when I think of the U.S. situation, the discussion of the St. Lambert and Rizal studies remind me of the anecdote of the drunk who was found looking for a lost dime under a street light. Asked by a helpful bystander if this was where he had lost it, the drunk replied: "No, I lost it over there in the dark, but I can see much better looking for it here."

The St. Lambert study is the prototype for all the Canadian immersion programs. There is no question at all about the efficacy of those programs, and if anything, the published data loses the amazing dexterity and charm of the children as they negotiate in French. There are a few additional points I would like to make which I think are important in understanding the results.

The immersion programs are housed in Anglo schools, and on the playground and with the school officials, the children all use English. The whole first year, in fact, the children mostly use English (although the teacher addresses them in French), and it is not until the second year the children themselves are expected to speak in French. Their French teachers are bilingual, and there is a lot of *Comment dit-on "so" en français?* in the classroom, i.e. requests for translation of an English word.

The children function in French with the communicative competence (Hymes, 1974) of English, i.e. they are not expected to give up their ways of speaking--their cultural ways of being. As a trivial example, in a class I visited, in answer to a question from the teacher, the children waved their hands and shouted *je sais, je sais*. A French Canadian child would have said *moi, moi* as Guy Dumas pointed out to me later. The children were not corrected. Consider how very different is the situation for a Chicano youngster in the Anglo school.

The programs are all voluntary, and represent the Anglo middle class response to legislation vis-a-vis French. English is the prestige language, and the children receive ample support of their mother tongue in and out of the home environment. The social and psychological setting of the Canadian immersion programs is very different from the situation in America, and one simply cannot generalize from one to the other.

There is one aspect of the program which puzzles me. That is the noticeable deterioration of the children's French pronunciation with marked English interference around grade four. I would very much like to know why this is so; I suspect the explanations are more likely to be neuro-chemical than social or pedagogical.

Finally, it is curious that the correlation of I.Q. with reading achievement was nonsignificant; it is not what Genesee

et al found in their *Report to the Protestant School Board of Greater Montreal* (1974).

The St. Lambert study and the other Canadian studies on the immersion programs (Swain, 1976B) lay to rest the notions that bilingual education is harmful for children. But I do find the St. Lambert study potentially one of the most dangerous studies I know as it is so often cited out of its social context--which Tucker has been careful not to do--as evidence for teaching children to read in the L_2 rather than in the L_1 .

It is tempting to write off the 1974 study of the Redwood City project as of no significance because of the small number of students involved in the bilingual program; six students in grade five, five students in grade four and seven students in grade three (Cohen et al, 1976). It is doubly tempting to write it off as the findings at first don't seem very palatable to advocates of bilingual education like myself. However, I don't think we can do that, and like Tucker, I think the study merits attention since it is a nonbiased discussion. It raises some very interesting and important questions, and most importantly, even though the number of subjects is so small, the findings tend to go in the same direction rather than scatter willy-nilly.

The report exemplifies Swain's (1976B) outline of the shortcomings of psychometric research, and especially with the small number of students the report would have been immensely enhanced with "observational data from informed observers, case studies of individual students, and specific information about program structure...and content." I would add interviews with the teachers and principals. What are the five Bilingual fourth graders like? When they improved so very much in reading in the third grade, why did they do so poorly in the fourth grade? Mean test scores on the Inter-American Test of Reading Levels 1, 2 and 3 in grade two was 31.6 as compared with the Follow Up II group's 36.6; in grade three was 53.2 compared to Follow Up II's 43.1; and then in grade four down to 17.0 compared to the Pilot group's 27.7 in the same grade. Did the fourth graders have an outstanding third grade teacher? But then what about the present third graders who did not improve similarly? Did they have another teacher? There is no way to tell from the report, and in a study where, to my mind, quality of instruction is a real issue in understanding the findings, the lack of such data is very frustrating.

There is no mention of aptitude scores. When you are comparing mean scores of groups of four and five children (English Storytelling Task), their relative aptitude--as well as personality--will most certainly influence their scores. How many of the five Comparison fourth graders--who outscored the Bilingual fourth grade in Spanish reading--spent their summers, as the report suggests but does not specify, in Mexico? If that is so, of course they will have done better in Spanish reading. On the other hand, they did no better in Spanish reading than the Pilot group did in fourth grade. Rather, I think the reason they

outscored the bilingual fourth graders, is that the latter did no better in Spanish reading than they had in English. Their mean test scores on Prueba de Lectura Inter-Americana, Nivel 1, 2, and 3 in grade two (N=16) was 47.4 as compared to Follow Up II's (N=17) 38.4; in grade three was 46.2 as compared to Follow Up II's 49.0 and in grade four 13.8 compared to the Pilot's 24.1 in that grade. It increasingly looks as if the five Bilingual fourth graders had a poor teacher in reading. Unfortunately there are no mathematics scores to compare with the Bilingual fourth graders' score, but on both the Spanish and English Storytelling Tasks they have lower scores in fourth grade than in third; in English Storytelling the mean score in third grade was 20.8 compared to Pilot's 19.4 and Follow Up II's 17.8; in grade four it was 20.5 compared to Pilot's 22.5. I think the evidence is quite clear that for whatever reasons--probably a poor teacher--the Bilingual fourth graders had a bad learning experience that year, not typical of their past performance. The conclusion is obvious. One can draw no implications for bilingual education in general from such data.

Let's look at the findings more closely. The Comparison groups all score higher in English reading and the Bilingual groups (with the exception of the fourth grade which must be discounted) score higher in Spanish reading. With transfer of decoding skills, the tests obviously tap more than literacy skills, or their scores would not have shown such differences. Whatever the tests tap, one skill is language proficiency. The Comparison groups clearly are losing ground in Spanish in the fourth and fifth grades. On the same test (PLI-A, Nivel 3), the Pilot and Follow Up I fourth grades have a mean score of 21.3 and 21.4, respectively; a year later the Pilot grade five only scores 13.7 on the same test. On the Spanish Word Naming by Domain test, the Bilingual grades three, four and five all increase their mean scores from the previous year and outscore the Comparison groups who, with the exception of the fourth grade decrease in scores from the previous year. On the Spanish Storytelling Task, the Bilingual groups all outscore the Comparison groups, who all decrease their scores from the previous year. I think it is safe to conclude that bilingual education programs do contribute to mother tongue development, and that such language skills which are tapped by these tests do not develop automatically but are nurtured by the school.

In mathematics, the Comparison groups all did better than the Bilingual groups. There is one interesting finding. The Follow Up II Comparison third grade, who outscored all other third grades on the English Word naming task, outscored all other groups in grade three as well as grade four on the same test in mathematics (California Test of Basic Skills, Form S, Level 1). I don't believe those results are coincidental, and probably reflect aptitude.

The children were all tested in English, and if the Bilingual children had been taught in Spanish this might account

for the difference. Also likely, and I would speculate, the scores reflect the quality of the instruction--as do the reading scores. Cohen comments that the Comparison school was known to have excellent teachers with more teaching experience than the bilingual teachers. Worse, I am convinced that "the teacher's simultaneous (concurrent) use of both Spanish and English (Cohen et al, 1976)" is detrimental to the learning of the L₂, a fact which the work of Kolers (1966) and Neufeld (1976) supports (and which Legarreta-Marcaida's dissertation gives substantial evidence for). It is probably detrimental to learning mathematics as well. The immersion programs are meticulously careful to keep the languages apart (Cohen and Swain, 1976) and indeed, to staff the programs with different teachers for the L₁ and L₂ sessions where the teacher is always a native speaker of the language he teaches, a practice I support in general. The L₂ teacher is more or less fluent in the L₁ of the children although he never speaks it to them.

I find the evidence that children under certain definable social situations should be instructed in the mother tongue as well as in the official language convincing, but I see no evidence which dictates fully bilingual teachers. I also see a great deal of harm done by such insistence. There are not enough fully bilingual teachers, and the result is that the children again and again get saddled with teachers whose command of English is poor. This was the basic complaint of the Chicago principals who were genuinely concerned that the children were not learning English. The remedy is worse than the illness, as the Latino officials put it. The reverse is equally true; Anglo teachers whose Spanish is poor are not useful, as Bolger's (1967) dissertation demonstrates.

I am not implying that the Redwood City bilingual teachers were not fluent in English; rather I am saying that we need to consider with great caution an approach to bilingual education which does not carefully separate the two codes, and in a situation like Redwood City, my increasing preference is to do so by individual teacher rather than by topic--following the model of the Canadian immersion programs.

Finally, one can of course also ask if the benefits of the program are not worth slightly depressed test scores. The only statistically significant test score difference between the Bilingual and Comparison fifth graders was in Spanish reading, with a mean score of 33.5 for the Bilingual students compared to 13.7 (on the PLI-A, Nivel 3) for the monolingually schooled Comparison group.

Tucker's report on the Rizal experiment is as straightforward as were the findings; only I would be a lot more cautious about the implications for U.S. bilingual education programs. The fact that "the average level of literacy in Tagalog is not closely related to the number of years in which it has been used as a medium of classroom instruction (Tucker citing Davis)" is clear evidence of mother tongue maintenance outside the school:

It is the official language, all the children are taught to read in Tagalog and the children's use of Tagalog outside the school is similar to the Canadian situation. In contrast, the United States data indicate that Chicano children who are taught to read in Spanish do better than those who are not are evidence of the role the school serves in mother tongue support. Such support seems to be necessary in a situation characterized by language shift, which is the case with Spanish in the U.S. but not with Tagalog in the Philippines.

Tucker comments that the pupils who had received English medium instruction performed better on subject matter tests in grade six than those schooled for varying amounts of time in Tagalog. They did, but those test results are a function of language proficiency since grade five and six were taught exclusively in English. At the end of grade four, the English medium pupils did better in social studies, health, arithmetic computation and science *when tested in English* while the Tagalog medium pupils did better *when tested in Tagalog*. Interestingly enough, the Tagalog medium pupils did best in arithmetic problems even though tested in English, echoing the Finnish findings of the relationship between mother tongue and achievement in mathematics (Ramos et al, 1967). But the grade six test results also show up the importance of language proficiency in subject matter achievement, and it is undeniable that "proficiency in English is directly related to the number of years in which it is used as a medium of classroom instruction."

There are also some other interesting findings. The socio-economic indexes taken in grade one predict achievement of English at the end of grade four as well as the aptitude tests also taken in grade one (there is no mention of any correlation between those two variables). At the end of grade six, "the covariate that has the highest correlation with the language tests is the socio-economic index (Ramos et al, 1967)." In the Rizal experiment, family socio-economic status was "controlled experimentally and statistically." We clearly see how higher social class favors the acquisition of English which in turn leads to higher achievement in subject matter knowledge. It seems as if social class did not to the same degree favor subject matter achievement in Tagalog, the mother tongue, and it would be interesting to know if that were so.

No one questions that, under propitious social circumstances, in good programs with good teachers and good materials, children can be schooled in an L2. In this regard it is interesting to look at the achievements of the Philippine children who were not in the experimental programs. In grade four, a Literacy Survey was conducted in Rizal Province in 1964. "The percentage of pupils judged literate in English in the experimental classes was 79.42; in the nonexperimental classes in the same schools it was 39.26. The percentage of pupils in the experimental classes judged literate in Pilipino was 93.76; in the non-experimental classes, it was 69.04. These differences are

highly significant (Ramos et al, 1967)." The children had been randomly assigned to the experimental classes, and these figures illustrate two points. One is the importance of good programs (which often is a function of social class), and the other makes very clear that in nonexperimental, mediocre programs it is much easier to learn to read in the mother tongue. Sixty-nine percent of the children learned to read in their mother tongue, compared to 39 percent in English. With apparent transfer of reading, i.e. symbol decoding, from language to language, it makes eminent sense in situations of early school drop outs to teach children to read in their mother tongue, as indeed Tucker points out in another connection. Language can later be learned without instruction, but reading cannot.

PART II

This section was also written with June Belkin, Janet Roth Graham and Elaine Williams.

I thought it might be helpful to look for the dime where we lost it, although admittedly the dark is penetrating. The following study was undertaken in June 1975 and examines 12 dissertations on bilingual education programs in the United States. I had, by that time, written two papers (1974, 1975) on bilingual education, the preparation of which caused me to examine most of the accessible literature on the evaluation and experiments on bilingual programs. However, I was left with a number of questions the formulation of which admittedly reflects my own bias. I then went to what is both inaccessible and expensive literature--doctoral dissertations--to see what evidence I might find to answer those questions. Through the Dissertation Abstracts, we identified the dissertations which we thought might bear upon our questions, although in most cases these were not the questions to which the authors addressed themselves--a fact for which they cannot, of course, be blamed.

The following discussion is organized by questions which appear in no order of significance.

1. *What are the effects of the teacher variable in bilingual education programs in terms of the teacher's cultural background, the teacher's degree of proficiency in L₁ and L₂, and the quality of instruction?*

Velasquez (1973) evaluated a bilingual/bicultural education program in California and implied that such Title VII-funded programs at least attempted to meet the objectives of the Bilingual Education Act, which calls for the recruitment and/or training (pre- and in-service) of well-qualified teachers fluent in the two languages, knowledgeable in both second-language teaching and the teaching of subject matter in two languages and sensitive to the needs of students. These are noble goals indeed, but how often and to what extent they are achieved is subject to question.

In her research study, Modiano (1966) empirically tested the hypothesis that reading comprehension in the national language would be more effectively achieved through initial reading instruction in that language. Although the teacher variable is not employed as an independent variable, nor specifically studied as an isolated factor, implications can be drawn from the data relating to reading comprehension in Spanish and the language of instruction for the initial teaching of literacy. The approaches in the two types of schools--bilingual and all-Spanish instruction--and, in particular, the different cultural backgrounds of the teachers in each, establish the basis from which the conclusions referring to effects of teacher variable can be drawn. Instructional methods and techniques in the bilingual Indian Institute schools were basically the same as those found in the monolingual federal and state schools. In addition to having a higher level of schooling and greater mastery of Spanish, many of the teachers in the all-Spanish schools had been exposed to training in methods and educational theory. In contrast, the bilingual teachers had limitations in academic areas, but had the ability to communicate in the vernacular, and an innate understanding of local cultures. Many of the monolingual Spanish school teachers, however, were limited in one or both of these factors, and may also have experienced negative attitudes toward the local communities. In considering the effect of the cultural background of teachers, it is also important to note that many of the National Indian Institute teachers were hired as *promotores*, requiring only a sixth-year primary certificate. Many of those originally hired were barely literate. Thus, if the higher achievement of pupils in the bilingual schools is perceived to be in any way related to the teacher variable, it would appear to be due to the teachers' similar cultural background.

In discussing her results, Modiano (1966) states: "It would have been desirable to distinguish between effects of the language of instruction in initial teaching of reading and teachers' ethnic identifications." In order to differentiate between the results of each of these two causal factors, Modiano suggests that it would have been necessary to find a sizeable number of schools where local Indians taught in the national language and another group of schools in which Mestizos taught reading in the vernacular. In the present study, two Indians teaching in Spanish were found in Chenalho. Although this sample is very limited, Modiano, as an indicator of a possible trend, presents the data from Chenalho showing the differences in mean scores among students of Indian teachers who instructed in the national language, and those of two other groups of teachers: Mestizos who taught reading in the national language and bilingual Indian school teachers who taught reading in the mother tongue. The Indian students who were taught reading in the national language by Indian teachers scored higher, although not significantly, than those taught in the national language by

Mestizo teachers, but significantly lower than their peers who first became literate in the mother tongue, being instructed by Indian teachers. Modiano (1966) therefore concludes: "On the basis of these data it appears that while students learned to read with comprehension in the national language more effectively with teachers of their own ethnic background, they learned still more effectively when reading instruction was approached through the mother tongue."

Two other studies in particular--Weffer (1972) and Oxman (1971)--provide us with some interesting data relevant to teachers' cultural background, although they do not specifically test this variable. In the course of evaluating several urban Illinois bilingual education programs, Weffer found that the Anglo teachers scored higher on measures of empathy than did the Latin or Latin-descent teachers and teacher aides in these programs. It must be noted that the instructional staff tested for degree of empathy was rather small: seven Anglos, 11 Latin Americans and 12 of Latin American descent. As an explanation for these findings, Weffer suggests the possibility that minority-culture teachers may tend to adopt more rigid teacher behaviors than do Anglos, who may be more relaxed and less concerned about maintaining an image as an authority figure in the classroom. If this is so, we would also suggest that the Hispanic teacher's outwardly more rigid classroom behavior reflects the norms of his/her culture, which teach Hispanic children to be respectful of strong authority figures and highly responsive to external means of discipline (i.e. shame, rather than guilt). Although Weffer does not attempt to measure the effects of teachers' ethnicity on the academic achievement of children in a bilingual program, she recommends that this question be researched. Her findings, then, appear to contradict frequently heard claims that teachers whose ethnic background reflects that of minority students will necessarily be more empathetic in dealing with them than will Anglo teachers.

The major hypothesis tested by Oxman (1971)--that bilingual minority group children would experience feelings of alienation in ordinary school situations (with dominant-culture teachers)--was rejected. Data further indicated that the non-bilingual school pupils did not perform better when the task was administered by an experimenter of their own ethnic group. Based also on the result that students from fully bilingual schools scored significantly higher on tests of alienation than did those in a limited bilingual or non-bilingual school, Oxman (1971) states: "Implementation of special bilingual programs, then, in which it is assumed that teachers who are bilingual members of the same ethnic group as the children would be able to elicit and maintain greater responsiveness on the part of bilingual children than teachers who are members of the dominant ethnic group may be based on false premises." Oxman also points to the similarly poor performance by the children on the task administered by experimenters of the same ethnic group. "It may be, as has been suggested (Ulibarri, 1960; Proshansky and Newton, 1968), that

the middle-class members of ethnic or racial minority groups who become teachers are more class conscious and more rejecting of lower-class children of their own group than teachers who are not minority group members (Oxman, 1971)." From these assumptions, based on empirical evidence not directly measuring the teacher variable, it appears that the same cultural background of the teacher will not necessarily produce favorable effects, and may even be detrimental.

The implications of cultural background of the teachers as inferred from the Modiano study on the surface appear to contradict those drawn from the Oxman and Weffer studies; however, a more careful analysis reveals a basic similarity. The fact that the Mestizos in the all-Spanish schools are described as having little understanding of the local culture and limited ability to communicate in the vernacular does not exclude the possibility that these Mestizos were originally from the Indian *municipios*. Since race and class in Latin America are largely defined by social and cultural behavior patterns, the Mestizo teachers could be playing the same role as the "middle-class members of ethnic or racial minority groups (Oxman, 1971)" who sometimes tend to reject the lower-class children of their own groups. The Mestizo teachers' limited "ability" to communicate in the vernacular may be, in fact, a limited "desire" to do so.

Several of the studies make reference to one or more sub-categories of question one, but do not test for these variables directly. There is no evidence which bears on the relationship of teachers' degree of language proficiency to the relative L₂ learning of the children. Bolger (1967) found, not surprisingly, that in a Spanish science program in seventh grade, the students of Hispanic background performed better than the English control group only when the science teacher was fluent in Spanish. In the majority of bilingual programs, the experimental nature of the program itself very often connotes better materials and a more competent teaching staff, and these factors often influence the favorable results of such programs when compared to the monolingually instructed classes. However, since the results of Modiano's study revealed better Spanish reading comprehension in the bilingual schools, with teachers who had a poorer command of Spanish, quality of instruction would have to be excluded as a possible intervening variable in that particular case. It must be recalled, however, that Modiano considers the language of instruction to be the most influential factor.

2. What is the most effective way to teach reading within a bilingual education program in terms of the factors of interference and transfer? Specifically, when should reading be introduced, in which language (L₁, L₂ or both) should reading be introduced? If reading is introduced in one language, when should transfer of reading to the other language be instituted?

Modiano (1966) specifically investigates whether reading should be introduced in the L_1 or the L_2 . The hypothesis, that reading comprehension in the national language is best achieved through initial literacy in that language, is rejected. Two measures of reading comprehension in the national language were employed. Teachers' estimates of individual students' reading comprehension were divided into two groups: Those able and those unable to read with comprehension in Spanish. The other instrument, a *Group Reading Test* developed by the investigator, was administered to the first group. It consisted of 25 multiple-choice picture identification vocabulary items, 25 multiple-choice items on a picture-phrase matching test, 12 items which necessitated following one-phrase directions and 36 true-false statements based on paragraph interpretations. Two other measures were utilized to verify the validity of the *Group Reading Test* scores: End-of-year promotional examinations of the Secretariat of Education and an *Individualized Reading Test*, designed by the author, which included stories pertinent to the life of the Highland Maya, accompanied by true-false questions. The proportion of students identified by their teachers as literate in Spanish was significantly higher in the bilingual Institute schools than in the monolingual Federal and State schools. The results of the group test of reading comprehension showed that within each *municipio* there was a significant difference between scores in favor of the students in the bilingual schools. In analyzing the data, the author attributes the more favorable results of the bilingual students to the fact that they were learning only one new skill (i.e. reading in the vernacular); whereas the monolingually instructed students were forced to learn two "somewhat related skills"--reading and a new language. She stresses the importance of material which is meaningful to students, i.e. in terms of their language background, in order for them to attain a high achievement in reading comprehension. As previously mentioned, Modiano's findings indicate a need to differentiate between the effects of ethnic orientation of the teacher and language of initial literacy.

In many of the bilingual programs dealt with in the dissertations, the teaching of reading was a component of comprehensive language arts instruction in both languages. Thus, findings concerning the effectiveness of a particular program's approach to reading instruction are often incorporated in a more general evaluation of the total bilingual language arts proficiency of the students involved. Frequently, however, the instruments used to measure this proficiency are standardized reading tests.

The Rivera study (1973) began simultaneous language arts instruction in English and Spanish to first and third grade Blacks and Puerto Ricans in a New York City ghetto school (it is assumed that the third graders had already begun reading English during their first three years of schooling, prior to the opening of the bilingual school). A control group consisted of Blacks and Puerto Ricans of similar age attending two all-English schools

nearby. At the end of the third year of bilingual instruction, standardized test results for English and Spanish reading proficiency were as follows:

(a) At both grade levels, there was a *tendency* on the Metropolitan Achievement Test (MAT) in English reading for the control group to outperform the experimental (bilingually taught) group, and for the Blacks to outperform the Puerto Ricans (both across experimental and control groups and within each). A greater number of significant differences was noted between the performance of Blacks and Puerto Ricans than between experimental and control groups. However, all experimental third graders were at least at the third-grade level and all experimental fifth graders at least at fifth-grade level.

(b) Third-grade Blacks achieved significantly better mean scores than did Puerto Ricans on MAT subtests of English vocabulary, reading comprehension and total reading, while there were no significant differences between subtest scores of fifth-grade Blacks and Puerto Ricans.

(c) At grade three, experimental-group Puerto Ricans exceeded control-group Puerto Ricans in English reading achievement. Fifth-grade Puerto Ricans in the experimental group performed about the same as those in the control group, as did fifth-grade Blacks.

(d) At both grades three and five, Puerto Ricans in the experimental group scored higher on the Inter-American Test of Spanish Reading than did those in the control group.

Although the findings of this study can be considered demonstrably due to the length of the program (three years), an important point should be made concerning testing procedures for English reading proficiency. In the experimental group, only those students who had been judged to be English-dominant at the beginning of the program (i.e. when they were in first or third grade) were administered the Metropolitan Achievement Test in English Reading three years later. Can, then, MAT test results for the English reading achievement of the experimental group be considered valid if none of the Spanish-dominant children (and possibly balanced bilingual children also) in the experimental group were tested? The last sentence of result (a) must be interpreted as meaning that all of those experimental-group children *who had been tested* using the MAT reading test were reading in English at least on grade level. Thus, the MAT reading test results exclude data on the English reading achievement of Spanish-dominant and possibly balanced bilingual pupils, precisely those students whom bilingual education programs are meant to serve. Since such an important part of the subject population was not tested, we must therefore question the validity of Rivera's (1973) findings regarding English reading proficiency. Testing procedures within the bilingual school itself or throughout the New York City public schools seem to be at fault here rather than the investigator's research design.

Olesini (1971), comparing third grade students with at least two years of bilingual instruction with those who had none, found that the bilingually-instructed group showed greater reading achievement in English. One can only assume that reading was introduced in both languages at the same time since he states that everything done in English was repeated later in the day in Spanish.

As discussed above, Modiano (1966) advocates initial reading instruction in the mother tongue until mastery of literacy skills has been achieved. Although oral skills in L₂ can be introduced at this time, Modiano concludes that it is essential to delay transfer of reading skill to L₂ until oral skills in L₂ have been developed. Several other programs introduced language arts development in two languages simultaneously. However, none of the research studies tested specific approach to reading instruction as an independent variable, nor were any cases of interference in reading reported. There is increasing evidence that the initial teaching of literacy in the mother tongue is beneficial, but the other questions remain unanswered.

3. *Is there evidence to support the notion of cognitive deficit in bilingual education programs?*

Most of the investigators involved referred extensively in their literature reviews to the long-standing controversy over cognitive damage as a result of bilingualism. Since it is generally recognized that verbal sections of standardized intelligence tests--if administered in other than the student's dominant language--are probably not valid indicators of their cognitive development, many of the investigators have: (a) excluded verbal sections from consideration, (b) translated them into the students' native language or (c) developed their own instruments.

Cohen (1973) used the Nonverbal Subtests of the Inter-American Tests of General Ability (directions were given in both Spanish and English) and story telling tasks in both languages--on a pre- and post-test basis--to evaluate the cognitive development of bilingually taught Mexican-American children versus those receiving conventional English-only instruction. The Nonverbal Subtests measured pupils' skills of association, classification and analogy. Results showed that the bilingual group performed as well as, or better than, control groups on these measures of nonverbal academic aptitude. Cohen (1973) concluded that "bilingual schooling does not hinder the development of nonverbal reasoning skill" and that "the bilingual treatment appears to have enhanced the nonverbal reasoning powers of the students in the program over time."

Skoczylas (1972) hypothesized that when compared to a control group of monolingually-instructed counterparts, bilingually-instructed pupils would achieve equal cognitive growth. Raven's untimed nonverbal *Coloured Progressive Matrices* test was utilized

to determine "intelligence" and "cognitive growth" of the subjects in the two groups. Results showed no significant difference on the intelligence measure indicating that there is no proof of an "intellectual deficit" caused by bilingual education programs. Skoczymas concluded, therefore, that the bilingually-instructed pupils were neither intellectually superior nor inferior at the end of two years of instruction. There is no evidence to support the notion of cognitive deficit as a result of bilingual education; and there is considerable evidence against it.

4. What is the evidence in regard to academic achievement?

The majority of the studies reported results of standardized achievement tests rather than intelligence tests to evaluate bilingual programs. It is not clear whether this practice was due to a lack of instruments suitable for measuring the intelligence of bilingual/bicultural children or to the accessibility and generally accepted validity of achievement test results.

Cohen (1973) reported that bilingually-taught Mexican-American children spanning three grade levels (including kindergarten) were slightly (but not significantly) less proficient in English language skills (including listening, speaking, reading and writing) as those receiving conventional English-only instruction. Depending upon the level involved, the bilingually-taught group was weaker in English spelling, vocabulary, communication ability or oral comprehension. The bilingually-taught group as a whole was slightly more proficient in Spanish language skills than the control group.

Weffer (1972) administered two versions (English and Spanish) of the *Test of Basic Experience* on a pre- and post-test basis to compare the progress of bilingually-taught and English-only instructed Hispanic first graders in bilingual language arts skills. She found that mean post-test scores of the bilingually taught children were significantly higher for Spanish language arts than those of the children taught in English only, but that their scores were the same for English language arts. The length of the bilingual program, however, was only four months. Girls in each group tended to outperform the corresponding group of boys in both Spanish and English language arts.

To determine "Spanish proficiency" and "English proficiency," Skoczymas (1972) used the *Dailey Language Facility* test to measure speaking ability in both languages and developed his own *English Listening Comprehension Test* and *Spanish Listening Comprehension Test*. Results showed no significant difference in English listening comprehension. However, the experimental (bilingually-instructed) group did score significantly higher on the Spanish speaking proficiency test.

H. Flores (1969) reported no significant differences between the Spanish and English language arts achievement of pupils taught bilingually and those taught only in English in the Coral Way program. By the end of their third year of bilingual

instruction, Coral Way children--Cubans and Anglo-Americans--were more proficient in their mother tongue than in their second language, but all had made "impressive gains" in learning both Spanish and English. It is generally agreed that part of the Coral Way program's success can be attributed to the relatively high socio-economic status of its students.

Olesini (1971) used the *Otis Quick Scoring Mental Abilities Test* and the *Metropolitan Achievement Test* in October with an alternate form of the MAT in April to measure achievement differences in third grade students between those who had at least two years of bilingual instruction and those who had no bilingual instruction. He found greater achievement for bilingually-instructed students in English vocabulary, reading comprehension, language and composite achievement, but no significant difference in spelling.

Morgan's (1971) comparison of bi- and monolingually taught first grade children showed that the bilingually-instructed performed better on the Word Reading and Paragraph Meaning Tests and Spelling Test of the *Stanford Achievement Test*, Primary I. However, both groups were equal with respect to the Vocabulary Test and Word Study Skills Test. It's interesting to note that although Morgan referred to a *bilingual* program, bilingual instruction and bilingual classes, it was in effect a French-as-a-second-language program; French (including "culture appreciation") was taught 30 minutes a day; 90 minutes a day devoted to English language arts and all other basic instruction in English.

Covey (1973) used Subtest #3 of the *Iowa Tests of Educational Development* (ITED) to measure "Correctness and Appropriateness of Expression" and the *Stanford Diagnostic Reading Test*. On both instruments, the experimental group scored significantly higher than did the control group; the sample consisted of ninth graders in their first year of bilingual instruction.

The results for standardized language arts achievement tests discussed above show that bilingually-instructed students (who were, for the most part, of Hispanic background) scored higher in Spanish language arts skills than their monolingually-instructed counterparts. In overall English language arts, the bilingually-instructed groups scored as well as, or higher than, the group receiving English-only instruction.

Several investigators measured achievement in mathematics. H. Flores (1969) noted that after three years of bilingual instruction, the arithmetic achievement of children in the Coral Way program was the same as that of children in the monolingually-instructed control groups. It is assumed that they were tested in both Spanish and English math, since the Coral Way program had adopted a full-bilingualism model. Weffer (1972) reported that after four months, bilingually-taught Hispanic first graders scored significantly higher on the Spanish math section of the *Test of Basic Experience* (TOBE) than did those in all-English classes. The two groups scored the same on English math sections. In addition, in the bilingual group, girls tended to score higher

than boys in English math, but the same in Spanish math. In the control group, boys tended to excel over girls in both English and Spanish math sections.

Three of the investigators used the math subtest of the *Cooperative Primary Tests* (Educational Testing Service) to determine mathematics achievement in English. Skoczylas' (1972) results revealed a significant difference favoring the control group (English-only instruction) in mathematics skills. The author concluded that learning math in Spanish does not transfer if measured in English. However, he did offer possible explanations for the results of the math test: This was the only test not administered to both groups by the same person; tests were given in English and the entire control group received math instruction in English, but less than half of the experimental group did. Cohen (1973) found that Mexican-American pupils at three grade levels who had received two-to-three years of bilingual instruction performed as well as, or better than, control group children on the *Cooperative Primary Math Test*. He concluded: "These findings suggest that bilingual schooling does not impair the acquisition of subject matter content... [and]...may in fact enhance the acquisition of math skills [but see Tucker's discussion]." Velasquez (1973) used the same test on a pre- and post-test basis for first and second grade English speaking students in a bilingual program. He found that the first graders showed large gains and that the second graders achieved state goals (gain of nine months), but gained less than the first graders. Third grade English speakers were administered the Arithmetic Subtest of the *Wide Range Achievement Test* (WRAT); their results showed a gain of only two months in a year. Velasquez (1973) also tested Spanish speakers in Spanish, using the Arithmetic Subtest of WRAT. The results were almost identical to those of the English speakers: First graders gained 18 months, second graders gained state goals (nine months) and third graders gained only two months in a year. The similarity of results in the two language groups is not surprising since both groups were in the same bilingual program, and each group was tested in its dominant language.

The Treviño study (1969) provided information on the arithmetic achievement of Hispanic and Anglo first and third graders enrolled in the Nye School bilingual program (see H. Flores, 1969). Results of the *California Achievement Tests* math subtests revealed no significant differences between the mean scores of bi- and monolingually-instructed children in arithmetic fundamentals and arithmetic reasoning. Covey (1973) utilized subtest no. 4 of the *Iowa Tests of Educational Development* (ITED) to ascertain "ability to do quantitative thinking." The mean scores of the experimental group on the pretest increased significantly on the post-test. The experimental group outscored the control group on the post-test, but the difference was not significant.

Rivera (1973) tested third and fifth grade Puerto Ricans and Blacks in a bilingual program and a monolingually-taught

control group of similar ethnic mix, age and socio-economic status, using the MAT in math. Subtests measured skills in mathematical computation, mathematical concepts and problem-solving. In considering her findings, it is important to note that only English-dominant children were tested. Results when mean scores were compared were as follows:

(a) At both grade levels, there was a *tendency* for the control group to outperform the bilingually-taught group on the MAT math test, and for Blacks to outperform Puerto Ricans (both across experimental and control groups and within each). Significant differences were more numerous between the performance of Blacks and Puerto Ricans than between that of experimental (i.e. bilingually-taught) and control groups. However, all experimental third graders tested achieved at *least* third grade level on the MAT in math, and all experimental fifth graders tested achieved at *least* fifth grade level.

(b) At grade five, the control group performed significantly better than the bilingually-taught group on MAT math subtests of computation and problem-solving, and also on the total MAT math test. It will be remembered both the bilingually-taught group and the control group contained Spanish and English speaking children.

(c) At grade three, experimental group Puerto Ricans scored lower than control group Puerto Ricans on the overall MAT math test. Fifth grade Puerto Ricans in the experimental group performed about the same as the Puerto Ricans in the control group on the MAT in math.

In discussing the lower performance of bilingually-taught students on two of the MAT subtests (result b), Rivera (1973) suggested that this may be due to problems in learning math terminology in two languages at different points in time, since the fifth grade students did not enter a bilingual program until the third grade. Hence, any math terms they had learned in English from kindergarten through second grade were not presented in Spanish until third grade, possibly resulting in confusion. The problem of the validity of Rivera's results--since only English-dominant children were given the MAT tests--has already been discussed earlier in relation to reading proficiency. Still another question arises when we consider the procedure used to test mathematics achievement: If bilingual instruction in math was given to the experimental group for three years, *why were they only tested in English math?* It appears that English dominants in both the experimental and control groups were tested in English reading and English math, and that *all* Hispanic children involved were tested in Spanish reading. Why, then, was Spanish math not tested?

Olesini (1971) compared the MAT scores for arithmetic computation and arithmetic concepts between bi- and monolingually-instructed third grade students. The results showed greater achievement for the bilingually-instructed group in arithmetic

concepts, but no significant difference between the groups in computation.

It appears, then, that programs with all-Hispanic students in both experimental (bilingually-instructed) and control (monolingual-English instruction) groups show that experimental groups did as well as, or better than, control groups in math achievement tested in English. Exceptions were the third and fifth grades in Rivera's (1973) study in which the control groups scored higher than the experimental groups on the MAT, and the Skocylas (1972) study in which the control group outperformed the experimental group although neither performed at grade level. It seems likely that language of test was a factor in influencing the results.

5. *What is the relationship to development of concept formation?*

Several of the aforementioned results for standardized intelligence and achievement tests allow us to draw some conclusions about the relationship between bilingual education and concept formation. Cohen (1973) found that bilingually-instructed pupils (grades one-three) did as well as, or better than, their monolingually-instructed counterparts on a test of "nonverbal reasoning skill." Rivera (1973) found that students who had three years of bilingual instruction (either in third or fifth grades) scored the same on the MAT subtest of mathematic concepts as monolingually-instructed students. However, on the "problem-solving" subtest, the fifth grade control group scored significantly higher than the experimental group. In the Weffer (1972) study (first graders), results for the TOBE section on "fundamental math concepts" (tested in both Spanish and English) showed that the experimental group scored the same as, or higher than, the control group. Treviño (1969) found no significant difference between scores of bi- and monolingually-taught first and third grade students in the California Achievement Test of arithmetic reasoning. Olesini found greater achievement for bilingually-instructed third graders than for those monolingually-instructed in arithmetic concepts of the MAT. In all of the above cases (except Rivera's fifth grade students' scores for problem-solving), bilingually-instructed students scored as well as, or higher than, the monolingually-instructed students. It would appear then that bilingual instruction does not hinder--and often facilitates--the development of concepts, particularly in the early elementary grades, regardless of students' ethnic background.

Hocker's (1973) study appears to bear this out. He examined the effects of language of verbalization, grade level and type of instructional program on the learning task and transposition performance of Spanish/English-speaking children. His results showed that *initial learning task performance* is affected by language used for verbalization during learning and that this effect

is more pronounced during first exposure to formal schooling. However, he also found that *transposition* performance was not affected by language used. He therefore concluded that there appears to be a difference in the rate at which young children solve problems in their two languages, but not between learning strategies. This would indicate that early instruction in the vernacular may help the development of concept formation in kindergarten and first grade students. Since there is greater ease of verbalization in the native language, concepts can be developed prior to proficiency in the second language.

None of the research studies reviewed has utilized age as an independent variable to determine the cognitive consequences of a bilingual education program. Due to a lack of carefully controlled and well written studies that are truly longitudinal, it is impossible to determine whether negative conceptual development at an early age necessarily indicates chronic deficit. However, many of the investigators recommended that such studies be conducted to determine the long-term effects of bilingual education.

6. *What generalizations can be made based on whether students are monolingual or bilingual when they enter the program?*

The distinction between mono- and bilingual children was seldom made; almost all studies considered students bilingual if they came from U.S. homes where a language other than English was spoken. Velasquez (1973), however, did consider this question when he stated concern over variance among Mexican-American pupils which necessitates consideration of "psycho-social factors" in determining what type of educational program is best for the child. He suggested the following possibilities as examples: (a) children who are assimilated into the dominant culture, or those who are truly bilingual and bicultural, may well fit into a standard curriculum; (b) children who know some of each language but not enough of either to function adequately in school may do well in English-as-a-Second-Language programs if they have English-language dominance; (c) those in this category who have Spanish-language dominance, and those who are Spanish monolinguals, clearly need a bilingual program. His point is certainly valid. Mexican-American students--or any similar group--are not a homogeneous group, and it may be foolish to assume that the same program is best, or even adequate, for all of them. It could be that the breakdown given above corresponds to socioeconomic status; there are certainly examples in the literature to support such an idea.

To determine the differences in cognitive development, self-concept, attitudes, etc. between students entering programs as monolinguals or as bilinguals, it would be necessary to utilize a kindergarten or first grade sample to avoid possible intervening variables resulting from introduction to L₂ in subsequent school years. The Skoczylas (1972) study represents an initial

effort in this direction with the *Language Usage Estimate* included is his sociolinguistic survey. He describes, and presents empirical data on, the home language use of Spanish and English in three generations for both his experimental and control groups. The raw scores are further classified into five dominant language categories for all subjects and for their parents. In addition, he includes in his survey criteria for determining the ethnicity of subjects, based on a functional definition of a Mexican-American child. Percentages of Anglos and Mexican-Americans in both groups are stated. The only deterrent from providing the necessary empirical evidence for an answer to question six is the fact that the various tables are not divided into the five dominant language classifications or ethnicity of the subjects, but rather into two categories representing the bi- or monolingually-instructed students. Nevertheless, Skoczylas' sociolinguistic survey illustrates a first step in determining effects of bilingualism or monolingualism upon entrance into the program and other societal factors as well.

7. *What is the relationship between bilingual education programs and students' self-concepts as reflected in attitudes and school achievement?*

Several of the research studies attempted to measure the effect of bilingual education on students' self-concepts, as reflected in their attitudes and school achievement.

Covey (1973) used the *Nebraska Attitude Inventory* to determine the subjects' attitudes toward self, school, peers and teachers. Results showed: (a) No significant difference between groups on the pretest of the "Attitude Toward Self," but a significant difference on the post-test favoring the experimental group. (b) On the measures testing "Attitude Toward School," the net standard score gain for the experimental group was not significant, as the experimental group scored significantly higher than the control group on both the pretest and the post-test. (c) Results of "Attitude Toward Peers" revealed no significant difference between the two groups on the pretest; the experimental group scored significantly higher than the control group on the post-test. (d) On "Attitude Toward Teachers," the experimental group scored significantly higher both on the pretest and on the post-test than did the control group. The investigator therefore concluded that Mexican-American students in a bilingual education program have a more favorable attitude towards self, school, peers and teachers, while those in a regular school program do not show favorable attitudes towards these same aspects of their environment.

The Skoczylas (1972) research study presents a description of the development and application of an evaluation model utilized to compare an experimental group of bilingually-instructed children and their monolingually-instructed

counterparts in the areas of academic, cognitive and linguistic growth, and in attitudes toward self and the two ethnolinguistic groups--Mexican-Americans and Anglo-Americans. Skoczylas hypothesizes that the bilingually-instructed children will not exhibit a less favorable self-image or attitude toward either cultural group. The Skoczylas semantic differential attitude scale served as the instrument for measuring attitude. The results on all three concepts--me, Mexican-American, Anglo-American--revealed that the ratings of the experimental group were as favorable as those of the control group, and for a total of five traits on all three concepts, were significantly higher than those of the control group. All students considered themselves to be relatively nice, happy, clean, rich, kind and healthy. The control group viewed themselves as less handsome and less fair, Mexican-Americans as relatively sad and dirty and Anglo-Americans as less nice than did the experimental group. Skoczylas (1972) mentions that although the experimental group consisted of only 20 percent Anglos and the control group 32 percent, the former had a more favorable attitude toward Anglo-Americans. Perhaps, on the basis of these findings, we can infer a tendency not only for the bilingual children in a bilingual education program, but also for the monolingual English speaking Anglo pupils, to possess a higher self-concept and more favorable attitudes toward the two ethnolinguistic groups.

Rivera (1973) used the FACES Scale to assess the self-concepts of bilingually-schooled Blacks and Puerto Ricans--as compared to a monolingually-taught control group--at the end of three years. Items on the FACES dealt with school, social relationships, physical development, home life and other situations. Her results were as follows: (a) At grade five, the bilingually-taught group showed a significantly more positive self-concept than did the control group. (b) At each grade level (three and five), bilingually-taught Puerto Ricans showed a more positive self-concept than did bilingually-taught Blacks; and control-group Blacks showed a more positive self-concept than did control-group Puerto Ricans. The investigator concludes that bilingual instruction in this case appeared to enhance the self-concept of all students, but especially of Hispanics.

The Rivera (1973) study also attempts to assess the impact of bilingual instruction on the bicultural attitudes of Puerto Rican and Black children, using the *Cross-Cultural Attitude Inventory* (Anglo-Puerto Rican version).

The adapted *Cross-Cultural Attitude Inventory* was designed to measure the attitudes of a subject for the Puerto Rican and the Anglo cultures, providing a score based on 11 items representative of each culture (*Test Manual*, 1972, p. 6). It provided a means for tentatively measuring the degree of positive or negative feelings which Puerto Rican and Anglo students had

for the two cultures (Test Manual, 1972, p. 24) and by extension the degree of positive or negative feelings they had about themselves.

It was found that: (a) At grade three, the experimental group scored (significantly and substantially) higher on measures of Puerto Rican attitudes than did the control group; the fifth-grade experimental group scored significantly, but only slightly, higher. (b) At grade five, the control group scored significantly higher than the experimental group, and Blacks significantly higher than Puerto Ricans, on measures of Anglo attitudes. (c) At each grade level--and also within each experimental or control group--Hispanics scored significantly higher than non-Hispanics on Puerto Rican attitudes. These findings suggest that bilingual instruction fostered bicultural understanding. This phenomenon was particularly meaningful in this case since the experimental bilingual school and the two control schools were located in an area of New York City troubled by increasing racial conflict and polarization between Blacks and Puerto Ricans--the two major ethnic groups. As might be expected, however, Rivera (1973) found that Hispanics always held more Hispanic attitudes than did non-Hispanics, who had more Anglo attitudes.

Cohen (1973) reports that Mexican-American children who had been bilingually-schooled for three years showed more positive attitudes toward the Mexican culture (as measured by the Cross-Cultural Attitude Inventory)--but with no loss of esteem for Anglo culture--and toward school, than did a monolingually-taught control group. The two other experimental groups, who had received only two years of bilingual instruction, showed the same bicultural attitudes as did corresponding control groups. Furthermore, experimental group children revealed an increase in the use of Spanish in a variety of contexts and with a variety of people.

Velasquez (1973) tested for significant difference in self-concept between participants in three elementary school bilingual education programs and three elementary school ESL programs using the *Coopersmith Self-Esteem Inventory*. The results indicated that in kindergarten through third grade, bilingual schooling produced higher self-concept for both English and Spanish speakers. (It must be noted that Velasquez uses the term English-speaker to apply to Mexican-Americans who are English dominant as well as to Anglo-Americans; hence "English speakers" could refer to people in either ethnic group.) Velasquez cautions, however, that the reliability of the *Coopersmith Self-Esteem Inventory* may be questionable since students requested rephrasing many times, and that there were "uncontrollable" variables such as teacher skill, attitude, etc.

In an effort to describe how students react to the programs, Velasquez interviewed 254 secondary school children--both English and Spanish speakers--who gave the following responses: 73

percent felt they had increased in Spanish language development; 60 percent felt they had increased in English language development; 74 percent felt the program made them feel better about themselves; 70 percent felt that academic environment included their attitudes and feelings; 89 percent felt that bilingual classes should continue; 40 percent felt that teachers were there to control rather than teach; 12 percent felt that education in the program was boring; 80 percent felt that they had a good chance of succeeding in bilingual classes.

Velasquez (1973) also tested for a statistically significant difference in attitude toward the bilingual education program between junior high (seven, eight, nine) and senior high (ten, eleven, twelve) students--both Mexican-American and Anglo-American. The students were asked questions based on the program's objectives, i.e. Spanish language development, English language development, self-concept development and academic development. Answers revealed the following: (a) Senior high students believed their Spanish proficiency had improved; junior high did not think they had improved enough. (b) Neither group felt their English proficiency had improved. (c) No significant difference in self-concept development between junior and senior high students. (d) Senior high felt more academic improvement than junior high. In his listing of results, Velasquez (1973) made the following statement regarding difference between Mexican-American and Anglo-American students: "However, the findings indicate that the Mexican-American students have improved academically more than their counterpart ($P=.01$) Anglo-Americans including their self-concept, the Spanish language development except in the English language development [sic]. The Anglo-Americans and Mexican-Americans did not improve significantly in the English language."

In summary, the studies cited in this section are in almost complete agreement regarding the effect of bilingual education programs on students' self-concept. All of the researchers reported that bilingually-taught children showed self-concepts as positive as--and, more often, more positive than--monolingually-instructed pupils. This was true of minority group children as well as of Anglo children. Since self-concept was often assessed by means of attitude inventories, in three studies specific data was also gathered on students' bicultural attitudes. Skoczylas (1972), Rivera (1973) and Cohen (1973) all found that after two-to-three years of bilingual instruction, students' bicultural attitudes were more positive than earlier.

8. *Does the type and degree of the cultural component affect students' motivation (as indicated by school attendance), parental attitudes, and community attitudes?*

Several of the studies looked at students' motivation and parental and community attitudes towards the bilingual program

as a whole, but did not specify the type or degree of the cultural component.

Although Cohen (1973) did not specifically consider the type and degree of the cultural component of the Redwood City bilingual program as an independent variable, he did test the entire program's effect on students' and parents' attitudes. He discovered that the bilingually-taught children have significantly fewer absences from school as compared to control-group pupils. Parents of the bilingually-schooled students proved to be more supportive than control-group parents of certain instrumental and integrative reasons for their children to learn both Spanish and English (e.g., to preserve their language and culture, to make friends, to get a job, etc.). The former were also significantly more optimistic about the effects of Spanish as a medium of instruction on their children's English language development.

Similar to Cohen, Skoczylas (1972) does not present the type and degree of the cultural component as an independent variable. However, he does provide information on the cultural component of the bilingual program. Daily classes in music, stories, songs, physical education and art once a week, were alternately presented in English and Spanish. The program also included field trips once a month to places of cultural significance--both Mexican-American and Anglo-American. Skoczylas hypothesized that the attendance record of the bilingually-instructed pupils would be equal to that of their monolingually-instructed counterparts. Therefore he concludes, on the basis of the acceptance of this hypothesis, that the attendance record did not indicate that the bilingual program was more demanding. It may also be possible to relate this result, although indirectly, to student motivation. The pupils' attendance record could be considered an indication of their motivation, attributable not only to the fact that the bilingual education program was not more demanding, but also to the nature of the cultural component.

Velasquez (1973) attempted to describe how parents and teachers--both Spanish and English speaking--react to a bilingual/bicultural program. Parents were asked how important the program was for their children, and the majority revealed positive responses to the program, particularly to questions where Spanish language was mentioned. One hundred percent of the parents desired children to speak both languages (95 percent were Spanish speakers). Sixteen teachers were given two questions: (a) What do I like about the program? (b) How would I improve it? All teachers "answered positively to questions regarding the program." Suggestions for improvement included use of the newest teaching methods, curriculum materials, better prepared teachers, and aides to teach not only the Spanish speaking children but also English speaking children.

Although Modiano (1966) does not specifically test the effect of the bilingual schools' cultural component on community.

attitudes, she does attempt to assess how well the National Indian Institute schools meet the needs of the community. Modiano also includes data on the levels of adult literacy and proportions of literate girls to demonstrate that schools using the mother tongue were more effectively able to reach the community. There was evidence of a higher degree of adult literacy in Spanish in communities served by the bilingual Institute schools, even though the Institute had a shorter history at the time the study was conducted. The bilingual schools were also considered, based on enrollment figures, better able to reach the girls, the more resistant segment of the population.

There is no evidence then in these studies that isolate the cultural component per se as having any effect. Rather, the evidence is that bilingual/bicultural programs have a positive effect on both students and parents. There are programs which only incorporate the cultural component such as the one for the Pomo Indian children where "the goals are cultural rather than linguistic (Spolsky, 1974)," and we shall have to look to the evaluations of such programs for evidence about the effect and importance of the cultural component in the bilingual programs. Chapa's dissertation (1975) is also an indication of the importance of the cultural component. He found no difference in self-concept between the two groups, but the program he evaluated contained only language instruction with no cultural component.

CONCLUDING REMARKS

In this part of the paper, we have attempted to answer some questions concerning bilingual education. Results of the studies involved were summarized and generalizations based on each of the above questions were made. We found in general that bilingual education shows rather favorable effects on pupils' achievement, attitudes, self-concept, etc. However, two important factors must be considered in evaluating these conclusions. First of all, each researcher has a particular bias which influences his research design (e.g., in terms of his choice of experimental and control groups, independent and dependent variables, testing instruments and procedures, etc.). Whether it is due to faulty research design or merely an inadvertent omission in the dissertation, important background information (e.g., children's previous educational experience, parents' education, children's degree of bilingualism and sociolinguistic factors) frequently is not included. Secondly, the authors themselves admit that the favorable results of innovative educational programs, such as bilingual ones, may be nothing more than manifestations of the "halo" or Hawthorne effect. Particularly in low socioeconomic school districts, a highly publicized program, with expert materials and well-trained teachers, providing special treatment for a select group of students, may enhance those students' overall attitudes and performance.

The highly individual nature of each bilingual education program and its participants prevents one from drawing valid, definitive conclusions about type of models, based on comparisons. Until bilingual programs with carefully-controlled, built-in means of evaluation are implemented, and then analyzed in the context of their unique societal circumstances, attempts to determine the most effective model of a bilingual education program remains a speculation. Disregarding particular models, the cumulative evidence on bilingual education programs in the United States is best summed up by the children themselves: "Uno tiene más oportunidad de aprender inglés sin necesidad de avergonzarse (Velasquez, 1973)."

Appendix A

DEPARTMENT OF EDUCATION STATE OF NEW MEXICO

STATEMENT OF POLICY--BILINGUAL EDUCATION

The 1970 U.S. census indicates that 40% of the population of New Mexico is linguistically and culturally different from the English-speaking or otherwise known as Anglo. This division in the composition of our population indicates that the schools of the state must meet the needs of children from the various language and culture groups of New Mexico.

It is an established fact that in certain regions of our state the population may be predominantly Spanish-speaking; in others the residents may speak any of the various Indian languages found in the southwest. In addition to the mother tongue, the national language, English, is also developed as a medium of communication. The immediate consequence is the generation of bilingualism, in which the individual person is forced to develop concepts in two languages and to be able to move from one language into the other on demand. Bilingualism, then, is used here to indicate the development of the basic communicative arts of understanding, speaking, reading, and writing in at least two languages. Whereas, developing monolingualistic communication skills implies certain objectives, problems, materials and techniques, we cannot expect these to apply unchanged to the bilingual situation where highly specialized approaches are required, especially for the teaching of English as a second or foreign language. Further compounding the condition is the fact that other home environmental circumstances--social, economic, and cultural--are reflected in the classroom population.

Among the objectives listed by the New Mexico State Board of Education for the education of all children, are the following:

1. To develop the child's capacity to think rationally, make sensible decisions, and deal effectively with *his* environment.
2. To help the child understand his own abilities and limitations and achieve a *positive concept of self*.
3. To foster the child's *individual talents* and creative abilities.
4. To achieve maximum development of the *fundamental skills* in each student.
5. To achieve maximum development of ability and desire in each individual to make the greatest possible contribution to *his own society* through responsible participation in, and benefit from, the great privileges of American citizenship.
6. In order to accomplish objectives 1-5, the primary objective of school programs for children whose mother tongue is not

English shall be achievement of proficiency in the English language.

The State Department of Education is increasingly aware that the standard curriculum may not satisfy the educational needs of bilingual children. In certain areas of the state materials, methods of instruction, and the objectives of the local school may not be appropriate for bilingual children. Thus, a Division of Bilingual Education has been formed at the New Mexico Department of Education to assist local schools in formulating and implementing programs for bilingual students. In order to attain the objectives listed above as well as to implement the educational philosophy stated in *Standards for New Mexico Schools*, local school personnel are urged to study the educational problems of their bilingual children with a view towards effecting necessary changes for the full education of these students.

The implications are many: teacher training and retraining, materials selection and development, alteration of teaching techniques, changes in grouping practices, lesson planning, course offerings, inservice programs, a reappraisal of administrative or supervisory responsibilities. Coursewise, one conclusion is certain: we must redesign the language arts program for approximately 40 percent of the students in the state. In some areas of the state a more realistic educational program should include instruction in the mother tongue and English for children who have not acquired fluency in the English language.

For example, many children who have Spanish as the language of the home have not progressed satisfactorily in several areas of the curriculum. In some cases, subject matter instruction in the Spanish language would ascertain satisfactory educational growth. A planned program for bilingual education would make these children literate in both English and Spanish, thus making the mother tongue of these students a positive factor in their educational development.

Appendix B

EXCERPTS FROM ABSTRACTS OF U.S. DISSERTATIONS ON BILINGUAL EDUCATION

This appendix contains a listing of, and brief statements about, dissertations in the United States which bear on problems and questions about bilingual education. We have included virtually all dissertations with the exception of some purely descriptive studies which are of no generalizable interest. Dissertations on teachers and teacher training, descriptions of program models, etc., and dissertations which do not appear in Dissertation Abstracts have been excluded.

Inclusion in the Appendix is not to be taken as an endorsement of any kind for quality, validity, etc. Any temptation to sort the dissertations according to the palatability of the findings has been resisted, and all findings are reported, even if it is obvious to us that they are the function of faulty research designs. We have, however, made no attempt at critical annotation and the statements of the problem and findings are in the writers' own words as they appear in Dissertation Abstracts.

As a body of knowledge, dissertations tend to be unwieldy, time-consuming and expensive to work with. Our intention has been to bring together an overview of the findings for easy access to the information collected.

Alvarez, J. M. "Comparison of Academic Aspirations and Achievement in Bilingual versus Monolingual Classrooms." PhD dissertation, University of Texas at Austin, 1975.

The primary purpose of this study was to determine if there was a differential effect on the academic achievement of 147 second-grade Mexican American students due to participation in bilingual and monolingual programs in two Austin public schools.

In Spanish reading achievement, students in the bilingual program scored significantly higher than those in the monolingual programs. No other significant statistical differences were found. It was concluded that there was no differential effect on academic achievement or academic attitudes and aspirations of the students in each program. Furthermore, it was concluded that using Spanish and English as mediums of instruction did not cause academic retardation or a low level of academic aspirations in the bilingual classes. It was also discovered that the bilingual classes, that used only half as much time in subject matter learning due to bilingual instruction, scored just as high as the monolingual classes in the study.

Anderson, W. C. "A Study of the Effect of Bilingualism on Scholastic Aptitude of Spanish-Speaking Students in Selected Binational American Sponsored Overseas Schools of Colombia." EdD dissertation,

University of Northern Colorado, 1974.

This study was an attempt to determine whether or not Spanish-speaking, Colombian students' scholastic ability is affected by studying in bilingual, binational American sponsored overseas schools in Cartagena and Barranquilla, Colombia.

One hundred twenty students were used for the study. All were from the upper or upper middle socio-economic class.

On the basis of the analysis, it must be concluded that the bilingual subjects' scholastic aptitude improved significantly by attending binational schools; that their scholastic aptitude by eleventh grade is, in three of four cases, equal to DAT standardized means; that much better scholastic aptitude scores can be obtained for native Spanish-speaking students studying in English by using the TDAD, especially for eighth graders. By using both DAT and TDAD scores for evaluation, bilinguals will show significantly higher scholastic aptitude than monolingual English or Spanish-speaking students.

Barclay, L. F. K. "The Comparative Efficacies of Spanish, English and Bilingual Cognitive Verbal Instruction with Mexican-American Head Start Children." PhD dissertation, Stanford University, 1969.

An experimental language and concept formation training program was tested with Mexican-American Head Start children in the New Haven Unified School District, Union City, California during the summer of 1967.

The research hypotheses tested were: (1) The use of a structured language training program, based upon both psychological and linguistic foundations, for two short time periods daily during the seven-week Head Start program will result in greater language development as measured by appropriate tests than will the use of music and art activities for commensurate time periods with bilingual and Spanish-speaking Mexican-American Head Start children. (2) A bilingual presentation of the above language training program will result in greater language development in English than either a Spanish or English presentation alone.

Analysis of the data showed that Hypothesis 1 could not be sustained. On none of the posttest or followup test variables was there a significant F ratio favoring the treatment groups. Two results weakly supportive of Hypothesis 2 were found. On one posttest comparison the Bilingual group was significantly higher than the Spanish group; on another posttest comparison it was higher than the English group. However, in both instances there were teacher x treatment interaction effects which tended to weaken the main effect. Hypothesis 2 therefore must be rejected for 18 out of 20 instances, and is only weakly supported in the other two instances.

This study thus showed that even in a structured language and cognitive training program during a summer Head Start experience, disadvantaged bilingual and Spanish-speaking children did not learn more, as measured on standardized tests, than did their peers exposed to a control treatment of music and art activities.

Bates, E. M. B. "The Effects of One Experimental Bilingual Program on Verbal Ability and Vocabulary of First Grade Pupils." EdD dissertation, Texas Tech University, 1970.

The primary purpose of this study was to compare the mean gain in English verbal ability of selected first-grade Mexican American and Anglo American pupils enrolled in a selected bilingual program with pupils not enrolled in the program. The secondary purpose of this study was to ascertain if there was a significant difference in the mean gain in Spanish and English vocabularies made by Spanish-speaking and non-Spanish-speaking first-grade pupils receiving bilingual instruction.

Although Mexican American and Anglo American first-grade pupils who were enrolled in a bilingual program of instruction spent at least one hour a day in Spanish language development, there was no significant difference in their mean gain in English verbal ability and that made by pupils not enrolled in the program.

There was no significant difference in the mean gain of the total experimental group between English and Spanish vocabularies. Mexican American pupils had a significantly higher mean gain in English vocabulary than the Anglo American pupils, while the Anglo American pupils had a significantly higher mean gain in Spanish vocabulary than the Mexican American pupils.

These findings seem to suggest that neither the Mexican American nor Anglo American pupil has been penalized in English verbal ability by being enrolled in a bilingual program of instruction. The results further suggest that the pupils enrolled in the bilingual program have had the added bonus of language development in Spanish.

Bolger, P. A. "The Effect of Teacher Spanish Language Fluency upon Student Achievement in a Bilingual Science Program." PhD dissertation, St. John's University, 1967.

This dissertation investigated the effects of two different types of bilingual science instructors upon student science achievement in a bilingual science program. It also considered the influence of student bilingual dominance upon science criterion scores used to determine program success and to compare teacher effectiveness.

The investigations pursued in this dissertation revealed the following: (1) Bilingual science education for seventh grade, junior high school students of Hispanic-background resulted in student science achievement significantly different from that of comparable students in the conventional program. (2) Analysis of results in terms of teacher type revealed that the bilingual science program obtained superior results only when conducted by fluent Spanish-speaking science teachers. (3) When bilingual science classes taught by the fluent teachers were compared to those bilingual classes taught by the nonfluent teachers the results favoring the classes taught by the fluent teachers reinforced the conclusion stated in (2), above. (4) Although the students in control and experimental classes were comparable initially in terms of science ability, they were not comparable in the extent to which each group used Spanish outside school. (5) When previous findings

were examined to determine if demonstrated group differences in bilingual dominance might be an uncontrolled factor which would have changed the result had it been controlled, the examination by analysis of covariance revealed that two results would have been changed. Omitting control of student bilingual dominance can affect the results.

Chapa, R. R. "English Reading and the Mexican-American Child in a Second Grade Bilingual Program." PhD dissertation, Michigan State University, 1975.

The purpose of this study was to investigate English reading achievement of Mexican-American children who have been in a bilingual program, Kindergarten through second grade, and study the possibility of hinderance in the normal progress expected.

Although the data were not significant in English reading achievement, the children in the bilingual program scored higher in vocabulary, comprehension, and combined score than the traditional group.

In Spanish reading achievement, significant difference was found between the two groups favoring the bilingual group. The results showed that Mexican-American children in the traditional program who had no formal Spanish reading instruction scored considerably lower than the children in the treatment group, consequently, it was concluded that the children in the bilingual program attained successful proficiency in Spanish reading while maintaining a high degree of success in English reading. It was concluded that the transitional bilingual program provided its participating pupils with the versatility of proficiency in reading in two languages, while not hindering their English reading progress.

No difference in self-concept was found between the two groups. As the school and home environment of both groups is very similar and neither group was subjected to any instructional practice to enhance self-concept, the investigator concluded that the evidence pointed to no significant difference between the two groups.

Cohen, A. D. "Innovative Education for La Raza: A Sociolinguistic Assessment of a Bilingual Education Program in California." PhD dissertation, Stanford University, 1973.

The study examined a series of research issues related to bilingual education, such as the effects of bilingual schooling upon Mexican American students' native and second language learning, upon their language use patterns, upon their performance in a non-language subject matter such as mathematics, upon their academic aptitude, upon their attitudes toward the Mexican and Anglo cultures, and upon their attitudes toward school. The study also looked at the effect on parental language attitudes of having their children in a bilingual study.

Although it was too early to assess the ultimate effects of bilingual schooling in Redwood City, the early indications were that bilingual education in this Mexican American community in California was a viable, significant innovation. Analysis of

covariance revealed that Mexican American youngsters were becoming literate in both Spanish and English, that they were using their Spanish without shame and more frequently than were their peers in the Comparison group, that their performance in the academic subjects was as good as or better than that of comparison youngsters in an English-only program, and that they felt better about being Mexican American and about their school experience than comparison students. Furthermore, the successful experiences of the children had a positive effect upon their parents.

Covey, D. D. "An Analytical Study of Secondary Freshmen Bilingual Education and Its Effect on Academic Achievement and Attitude of Mexican American Students." EdD dissertation, Arizona State University, 1973.

The purpose of this study was to determine whether: (1) the cognitive achievement in the academic disciplines of English (correctness and appropriateness of expression); Mathematics (ability to do quantitative thinking); and the area of Reading (literal and inferential) by ninth grade Mexican American students enrolled in a bilingual program, was significantly different from ninth grade Mexican American students enrolled in a regular school program; and (2) attitudes toward self, school, peers, and teachers were significantly different for ninth grade Mexican American students enrolled in a bilingual program than for ninth grade Mexican American students enrolled in a regular school program.

It was concluded: (1) Mexican American students enrolled in a bilingual education program achieve significantly higher in the academic disciplines of English and the area of reading than do Mexican American students enrolled in the regular school program. (2) Mexican American students enrolled in a bilingual education program have a favorable attitude toward self, school, peers, and teachers; whereas Mexican American students enrolled in a regular educational program do not indicate a favorable attitude toward self, school, other students, and teachers. (3) Mexican American students enrolled in a bilingual education program do not exhibit a significantly higher ability to do quantitative thinking (mathematics) when compared with Mexican American students enrolled in a regular educational program.

Del Buono, X. A. "The Relationship of Bilingual/Bicultural Instruction to the Achievement and Self-Concept of Seventh Grade Mexican-American Students." PhD dissertation, Michigan State University, 1971.

The purpose of this study was to probe the relationship of a bilingual/bicultural school program and the achievement and academic self-concept of Mexican-American seventh grade students.

Although it cannot be stated that the cause for the differences found was the direct effect of the treatment, it can be concluded that Mexican-American seventh grade students in the bilingual/bicultural program did significantly better in school achievement and had more positive self-concepts of their ability than did Mexican-American seventh grade students in the traditional program.

Durfey, C. R. "An Evaluation of Bilingual Education with a Cross Cultural Emphasis Designed for Navajo and Non-Navajo Students in San Juan County, Utah." EdD dissertation, Brigham Young University, 1971.

The purpose of this study was to determine if there were significant differences in academic achievement and oral English development between pupils enrolled in the bilingual educational program in San Juan School District and pupils enrolled in a conventional program in the control schools in the same school district during the 1969-1971 school years.

The findings revealed that kindergarten and first grade Indian and non-Indian pupils enrolled in the bilingual program made gains which were equal to or significantly greater in academic achievement than similar pupils enrolled in the control schools. The academic achievement differences, however, during grade two favored the control group. Minor differences on oral English development generally favored the experimental group.

Edwards, J. R. "Growing Up a Franco-American: The Social and Academic Effects of Bilingual Education in Northern Vermont." PhD dissertation, McGill University, 1974.

A French-English bilingual education programme in Northern Vermont was studied to investigate its effects upon the French-speaking children. Data was presented showing the decline in French usage in the area, and the gradual assimilation of the French families into the American mainstream. Against this background, the programme was seen to have helped the French pupils in academic performance compared both with their English schoolmates and with pre-programme French children.

Fantini, A. E. "Language Acquisition of a Bilingual Child: A Sociolinguistic Perspective (To Age Five)." PhD dissertation, University of Texas at Austin, 1974.

This study is a sociolinguistic analysis of language acquisition based on the longitudinal observation of one bilingual child. The study concludes with several general observations drawn from the data and analyses, which suggest that the child begins differentiation almost immediately upon contact with the two language systems, that this differentiation is facilitated by the separate use of each language in the environment, and that the child is capable of complete code switching as early as age 2;8. The conclusions stress the effect of social variables on language choice, the influence of the caretakers' role on the child's developing verbal behavior, and the existence of differentiated language styles as an early development in child speech.

Frankfort, N. "The English-as-a-Second-Language Component of Selected Bilingual Programs in a New York City Community School District: A Descriptive Study." EdD dissertation, New York University, 1975.

The purpose of this study was to describe the teaching of English as a second language as it functioned within the bilingual programs of five selected elementary schools in New York City. These programs were among the first to be implemented in New York

City under the provisions of the Bilingual Education Act; they had been in operation for four years; and they were designed for Spanish-speaking children.

In addition to a comprehensive description of the programs, some of the findings that emerged from the study are: (1) All of the teachers who are teaching English as a second language in these programs are good linguistic models with native or near-native competence in English. (2) All but two of these teachers have knowledge of and varying degrees of ability in Spanish as a second language. (3) No pre-service requirements exist as to the preparation and training of the teacher of ESL other than the possession of a license to teach. (4) Most of the teachers have had at least one course in methods of teaching ESL, but are lacking any extensive training in the discipline. Only one participant was licensed as a teacher of English as a second language. No one had a degree with a major emphasis in this field. (5) The audio-lingual method and the techniques, materials and procedures commonly associated with this method is the preferred choice of all but one of the respondents. (6) Teacher-made materials constitute the major elements of the ESL curriculum, although the teachers are not qualified to prepare such materials. (7) The assessment of a pupil's English language difficulty is based on a subjective rating scale. (8) The evaluation of a pupil's progress in the development of English language skills is based on teacher judgment and the same subjective rating scale. (9) The major emphasis of the ESL program is on reading and not on the development of the aural-oral language skills. (10) Children who need more intensive work in ESL than is provided in the bilingual setting are sent to the assigned teacher of English as a second language for small-group instruction.

Frauley, R. F. "Relationship among Receptive Language Skills, Type of Second Language Acquisition Program, and Reading Achievement." EdD dissertation, State University of New York at Albany, 1972.

Approximately 55 percent of the pupils entering the first grade in the English schools of Montreal come from homes in which the main language spoken is Italian. The language of instruction in schools which they attend is English and all their reading instruction and materials are in English. Because no special programs are offered to help these pupils to acquire language skills in English, it is likely that their inability to understand the language of instruction is adversely influencing their acquisition of school-related skills and abilities.

The purpose of the present study was to investigate the relationship among receptive language skills, type of second-language acquisition program and reading skills.

It was concluded that neither treatment was more influential than the other in: the development of receptive language, the development of reading readiness skills, or the development of reading skills. The teachers also appear to constitute an important variable which should be considered in studying the possible influence of programs. It is also possible that most of these pupils need longer than 8 weeks in which to develop receptive language skills.

Garcia, N. C. "Language Factors in the Employment of Bilingual Mexican-Americans: A Case Study Analysis." PhD dissertation, Michigan State University, 1971.

The present study was a pilot investigation of the perceived English language performance of employed bilingual Mexican-Americans. Specifically, the English language abilities of bilingual Mexican-Americans were compared with those of monolingual non-Mexican-Americans. The objectives were to determine the importance of English language abilities for placement, adjustment, and advancement in white-collar occupations and to develop comparative socioeconomic, educational, and employment background profiles of the two ethnic groups as well as a language profile of the bilingualism of the Mexican-Americans. From the findings, implications for the improvement of the occupational training of bilingual Mexican-Americans were derived for use in bilingual, business, and vocational education programs.

The dual language characteristic of the Mexican-American employees did not affect their overall job-related language performance. Their relative performance on certain language factors, however, provided insight on how bilingualism can promote and mitigate problems for a bilingual employee. To a marked degree, these employees were considered to speak English with Spanish accents, but the more critical factors in their performance were vocabulary and fluency.

A prospective job applicant was expected to have certain language abilities in order to perform his job satisfactorily. These included comprehension of written material and of verbal instructions; use of correct verbal grammar; and use of words which are varied, selective, and relevant to his verbal conversations.

Gardiner, J. "The Effectiveness of Bilingual Education on Second Grade Children." EdD dissertation, George Peabody College for Teachers, 1973.

The purpose of this study was to investigate changes in academic achievement and the self-concept of children as a result of participation in bilingual education.

An investigation was made of the St. Martin Parish Bilingual Education Program, which is a five-year federal program located in Breaux Bridge and Parks, Louisiana. It is currently in its third year of operation. The entire second grade population of the Bilingual Education Program was selected for investigation, which provided approximately eighty subjects for the experimental group of this study.

Academic achievement was highly significant favoring the experimental group over the control group in the French and English language arts area, the French achievement mathematics area, and the Stanford achievement mathematics area. There were no significant differences shown on the self-concept measurement, whereas the parent involvement measurement did show significance favoring the control group.

Hernandez Flores, S. "The Nature and Effectiveness of Bilingual Education Programs for the Spanish-Speaking Child in the United

States." PhD dissertation, Ohio State University, 1969.

The purpose of this study was to determine the nature and effectiveness of bilingual education programs for Spanish-speaking children in the United States. Several achievement studies are reviewed and their findings are reported.

Among the most interesting conclusions of this study are the following: (1) As of the spring of 1969, the number of "real" bilingual education programs in the United States was approximately twelve. (2) The two largest cities, New York City and Chicago, have one bilingual program each. (3) Based on the evaluations of these five programs by local and non-local agencies, the effectiveness of these programs has been clearly established. (4) The general feeling among most educators of the non-English-speaking is that we are at last near a solution for the educational problems of these children. (5) The usual problems of availability of materials, evaluation procedures, teacher training, recruitment, financing, etc., continue to be chief concerns for the advocates of these programs. (6) Radio and television have been neglected as partial answers to the transmission of instruction via a central control station. (7) Each bilingual program contains some outstanding feature not found in the other programs, or carried out in such a superior manner as to be conspicuous.

Hocker, P. N. "Two-Stimulus Transposition as Demonstrated by Spanish/English Speaking Children from Bilingual (Spanish/English) and Monolingual (English) Instruction Classrooms." PhD dissertation, New Mexico State University, 1973.

This study investigated the effects of the language used by bilingual children for verbalization during problem solving.

Results. It was found that learning task performance of native Spanish speaking children is affected by the language used for verbalization. Subjects who trained and verbalized in Spanish required fewer training trials than those who trained and verbalized in English. The transposition test results suggest an English mediation deficiency for young kindergarten subjects. That is, although verbalizations were made during training trials, the test behavior of the English mediating kindergarten subjects was apparently not under verbal control.

Implications. Results of the study suggest that as a native Spanish speaking child enters school, he will probably learn more easily if he is taught in his native language. This condition will probably persist through his first year at school. It was further inferred from the transposition test results that an English mediation deficiency may exist in kindergarten SES children. This deficiency would adversely affect the acquisition of concept knowledge for these children if they are instructed only in English and are required to verbalize concepts only in English.

Holick, R. J. "A Comparison of Reading Vocabulary and Reading Comprehension Skills between Bilingual and Monolingual Czech-American Students." PhD dissertation, Texas A&M University, 1975.

The study was designed to investigate whether reading achievement differed between bilingual and monolingual students of the

fifth, sixth, and seventh grades in several Texas schools where the Czech-American culture is significant.

Three major conclusions were made as revealed by the findings: (1) bilinguals read as well as monolinguals, (2) females read better than males at these grade levels, and (3) students from a high socio-economic level read better than students from a low socio-economic level.

Johnson, B. E. "Ability, Achievement and Bilingualism: A Comparative Study Involving Spanish-Speaking and English-Speaking Children at the Sixth Grade Level." EdD dissertation, University of Maryland, 1962.

Purpose: In essence, this study explored three questions:

(1) Is it possible to predict difference appearing between Mexican and Anglo children on group tests from a given theoretical framework about cognitive functioning? (2) Do the tests themselves provide data adequate enough to support conclusions concerning the differences existing between Mexican and Anglo school children? (3) Given a curriculum designed to encourage the learning of English incidentally as a language, do the children experiencing this exhibit superior test performance compared to other children not so involved?

The location used for this study was a town of 15,000 population in Southern California, having 30 percent of its elementary school children speaking Spanish as their vernacular.

Findings: (1) Anglo children performed at a significantly higher level than Mexican children on the following measures: CTMM Total IQ, CTMM Verbal IQ, CAT Reading Vocabulary, CAT Reading Comprehension, SRAAS Reading Vocabulary, SRAAS Reading Comprehension, SRAAS Grammar, SRAAS Arithmetic Reasoning, and CAT English Mechanics. (2) There were no significant performance differences between Anglo and Mexican children on the following measures: TOGA IQ, CTMM Non-verbal IQ, SRAAS Arithmetic Computation, CAT Arithmetic Reasoning, and CAT Arithmetic Fundamentals. (3) On any tests administered there were no significantly greater score increases by the children attending School II when compared to scores received by children attending School I.

Legarreta-Marcaida, D. "An Investigation of the Use or Non-Use of Formal English-as-Second Language (ESL) Training on the Acquisition of English by Spanish Speaking Kindergarten Children in Traditional and Bilingual Classrooms." PhD dissertation, University of California, Berkeley, 1975.

This longitudinal study investigated the facilitative effects of different program models on both acquisition of English and maintenance of Spanish by native Spanish-speaking kindergarten children. This was established by interaction analysis data gathered in these classrooms. The five treatments were: (1) Traditional, no ESL. (2) Traditional, with ESL. (3a) Bilingual, unbalanced language, no ESL. (3b) Bilingual, balanced language, no ESL. (4) Bilingual, unbalanced, with ESL.

Balanced language use occurred in the bilingual classroom using an "alternate days" approach; the unbalanced language use

classrooms used the "concurrent translation" approach.

Using multivariate analysis of variance on gain scores, it appears that Treatment 3b, Bilingual with balanced language, and no ESL, produced significantly greater gains in communicative competence in Spanish as well as English, though to a lesser extent, than did the other treatments. Treatment 3b also produced greater gains in oral comprehension of English, than did the treatments which included daily ESL training (Groups 2 and 4). There were also significant differences among treatment groups on the vocabulary measures in English and Spanish, for the home, again with Bilingual treatment superior to Traditional treatment. No significant differences appeared on the oral production measures in either Spanish or English.

Lopez, M. "Bilingual-Bicultural Education and the Self-Concept of Mexican-American Children." PhD dissertation, Wayne State University, 1972.

Problem: Purpose of this study was to investigate the relationship between the self-concept of elementary school children and their participation in bilingual-bicultural educational programs.

Findings: The major findings of this investigation were:

- (1) Mexican-American children participating in bilingual-bicultural education programs exhibited a more enhanced self-concept than Mexican-American children participating in regular programs.
- (2) Mexican-American children and Anglo-American children reported scores that indicated there was no difference in self-concept between the two ethnic groups.
- (3) Mexican-American and Anglo-American children participating in bilingual-bicultural educational programs reported a more enhanced self-concept than their counterparts in regular educational programs.
- (4) Anglo-American children participating in bilingual-bicultural education programs reported a more enhanced self-concept than Anglo-American children in regular education programs.
- (5) Anglo-American children reported self-concept scores which were greater when they constituted a majority in the classroom. The same phenomenon was true of Mexican-American children. Therefore there appeared to be a direct relationship between the reported self-concept of children and the ethnic classroom composition.
- (6) Anglo-American and Mexican-American children reported a decline in self-concept between grade one and two and between grade two and three. There was a general digression in self-concept from grade to grade as children "progressed" in school.

Lugo, J. O. "A Comparison of Degrees of Bilingualism and Measure of School Achievement Among Mexican-American Pupils." PhD dissertation, University of Southern California, 1970.

Purpose: The major purpose of this study was to explore the relationship between three degrees of bilingualism of Mexican-American pupils, from the ghetto of Los Angeles and fifty-six measures of school achievement in order to develop criteria for early pupil placement into one of the three existing school programs:

- (1) English-as-a-second-language; (2) bilingual education; and (3)

the regular school program. Ancillary goals were to explore the corollary effects of sex and intelligence on the measures of school achievement. Another purpose was to develop an instrument for measuring educator and pupil readiness to participate in bilingual education.

Conclusions: the regular school program in the school district studied does not seem to be helping the Mexican-American pupil to achieve school success regardless of (1) English language competency, (2) pupil birthplace, (3) parental birthplaces, (4) sex membership, (5) length of residency in the United States, and (6) scholastic aptitude. The results suggest that lack of English may not be the most important barrier to the school success of the Mexican-American. The fact that Spanish-speaking pupils of recent residency did not fall behind English speakers suggests that positive identification with one's culture is a more powerful motivator for tested achievement than competency in English. Perhaps the development of culturally relevant curriculums in both languages for use with speakers of Spanish and English of different residential backgrounds may provide the necessary alternatives. Educators of Mexican-American pupils need intensive in-service education.

Luhman, R. A. "The Social Bases of Thinking and Speaking: A Study of Bilingual Chicano Children." PhD dissertation, University of Kansas, 1974.

Concurrently, there has been a noticeable gap in much of the research directed toward language and cognition in that little attempt has been made to relate them to the social environment from which they come. It is the purpose of this research to deal with this issue.

The primary finding of this research is that there is very little difference in the actual content of the groups the children formed but that there is a definite variation in the logic used to form those groups. This variation in logic occurred across the town and rural children and across Spanish and English. Beyond that general observation, however, it was also found that the nature of the child's direct experience with the objects he grouped had a major bearing upon the manner in which he conceptualized the logic he applied to them.

Overall, the most significant finding of this research is that the logic of symbolic grouping is directly related to the social and linguistic experience that children have with the objects they group. The preference for different kinds of logic does not, however, necessarily alter the content of the groups they form; the difference in routes does not determine a difference in destination.

Mallory, G. E. G. "Sociolinguistic Considerations for Bilingual Education in an Albuquerque Community Undergoing Language Shift." PhD dissertation, University of New Mexico, 1971.

One concern of this study is to consider bilingual education from a sociolinguistic perspective. Some of the political arguments leading to Title VII legislation are reviewed in light of sociolinguistic considerations, as are some of the major theoretical

models of bilingual education. Implicit assumptions regarding questions of maintenance and shift are given particular attention, as such assumptions are a major influence on bilingual program development. A proposal for bilingual education in Albuquerque is analyzed by sociolinguistic terms.

The second major concern of this study is to review diglossia, a sociolinguistic construct particularly relevant to bilingual education.

Bilingual programs which ignore sociolinguistic trends of a community are often self defeating, but such trends are so complex as to evade realization except by the most time consuming methods. The parents, however, are willing to talk about the bilingualism of their children, and it seems both reasonable and proper that the bilingual community should make decisions and policies for institutionalization of their languages.

McClinton, J. W. "Effectiveness of a Bilingual Vocational-Technical Developmental Program." PhD dissertation, University of Missouri at Columbia, 1972.

This study was designed to evaluate the effectiveness of the Bilingual Vocational-Technical Developmental Program at Texas State Technical Institute-Harlingen Campus, through achievement testing in both English and idiomatic Spanish languages. Specifically the questions asked were: (1) Do the Mexican-American students express their competencies better in "Tex-Mex" than in English upon entering training; (2) Does the developmental program achieve its goal of assisting the Mexican-American students to increase their competencies and express these in English; and the supporting questions, (3) How do the Mexican-American students at Harlingen compare with students (mostly Anglo) in a similar program at the Waco Campus? This study was conducted between September and December, 1971.

The Mexican-American students began the training program expressing their numerical competencies equally well in both languages. In Reading and Technical Comprehension, they express themselves at a significantly higher level in English.

The students made significant gains in all three areas during the training program. Some gain was noted on the Spanish version tests, but the most gain was in English version tests. The developmental training program succeeded in preparing these students to enter the more formal technical training programs.

When compared with the Anglo students, the Mexican-American students achieved at a comparable level in Numerical Competence and Reading both at the beginning and at the end of the training program. However, the Anglo students achieved significantly higher in Technical Comprehension both at the beginning and at the termination of the training program. This can probably be attributed to the previous high school training in this area for many of the Anglo students. The Anglo group made a significant gain during the training program only in Numerical Competence.

The bilingual approach to instruction was effective and should be continued. Except for special cases, achievement testing should continue using standardized English version tests, since the Mexican-American student can express his competencies at least as

well through written English as through written Spanish. The advantage of the bilingual approach to instruction is in oral communication rather than through written expression for these students.

Morgan, J. C. "The Effects of Bilingual Instruction on the English Language Arts Achievement of First Grade Children." EdD dissertation, Northwestern State University of Louisiana, 1971.

The purpose of this study was to investigate the following problem: Will first grade pupils who come from bilingual families obtain significantly higher scores through a bilingual educational program than will first grade pupils who come from bilingual families and who are enrolled in a monolingual educational program? The problem as stated was analyzed in relation to English language arts achievement as measured by the Stanford Achievement Test at the end of the first year of instruction.

Conclusions: (1) First grade pupils from bilingual families who receive instruction through a bilingual educational program develop greater competency in analyzing words without the aid of context. (2) First grade pupils from bilingual families who receive instruction through a bilingual program demonstrate greater competency in the comprehension of reading passages requiring integration of the meaning of two or more sentences. (3) The first two tests of the Stanford Achievement Test (Word Reading and Paragraph Meaning) constitute measures of reading achievement. Therefore, in terms of reading achievement, a bilingual educational program for first grade pupils from bilingual families appears to be superior to a monolingual educational program for first grade pupils from bilingual families. (4) First grade pupils from bilingual families who receive instruction through a bilingual educational program demonstrate greater ability to spell words than do first grade pupils of bilingual families who receive instruction through a monolingual educational program. (5) The two programs were equally effective as far as achievement in Vocabulary and Word Study Skills were concerned. There was a lack of statistical significance at the .05 level of confidence.

Morris, R. P. "Self-Concept and Ethnic Group Mixture among Hispanic Students in Elementary Schools." PhD dissertation, Columbia University, 1974.

Cuban, Dominican and Puerto Rican students in the fifth and sixth grades were used in this study to investigate differences in self-concept as they related to ethnic group membership and population proportions of the children within three elementary schools. The relationship between self-concept and the students' length of stay in New York was examined.

The first research question, which asked whether there were differences in self-concept among the three Hispanic groups was supported by the data; however, when reading test scores were held constant in an analysis of covariance, the differences were cancelled out.

The second research question which asked whether the differences in self-concept could be attributed to the population

proportions of the children within the schools was not supported by the data.

The third research question which asked whether differences in self-concept were related to subjects' years of stay in New York was partially supported by the data. The results indicated, for the Puerto Rican sample only, that self-concept decreased for these children the longer they were in New York, particularly in the public schools.

Nagy, L. B. "Effectiveness of Speech and Language Therapy as an Integral Part of the Educational Program for Bilingual Children." PhD dissertation, United States International University, 1972.

The purpose of this study was to investigate the effectiveness of speech and language therapy for Mexican-American school children when it was offered in conjunction with a program of English as a Second Language.

The findings of the study indicate that speech and language therapy in conjunction with English as a Second Language classes is of significant value on all grade levels when taken as a whole. When the study is analyzed on grade levels, however, it would appear that the degree of value varies. The study may be interpreted to suggest that on the Primary Grade Level, the speech and language therapist may act as a consultant if the teacher of English as a Second Language placed concentrated emphasis on training in auditory discrimination. On the Intermediate Grade Level the services of the speech and language therapist are warranted, perhaps on a three times a week program. The necessity for daily speech and language therapy is most strongly indicated on the Secondary Grade Level where the most highly significant differences between the differential pretest and posttests of the experimental and control groups occurred.

Ng, J. P.-L. "The Effects of Bilingual Science Instruction on the Vocabulary, Comprehension Achievement, and Conceptualization of Elementary School Chinese Children Whose Second Language is English." EdD dissertation, University of California at Los Angeles, 1970.

This study investigates the effects of bilingual instruction as revealed in several aspects of science learning. The study measures the differences in vocabulary, comprehension achievement and conceptualization between two groups of Chinese children who were taught monolingually (using English) and bilingually (using both English and Cantonese, a Chinese dialect).

The following hypothesis was formulated: Children taught bilingually will achieve better results than children taught monolingually on multiple choice tests for vocabulary, comprehension achievement, and conceptualization in science. On the basis of statistical evidence the hypothesis was partially accepted; it was found that children taught bilingually surpassed children taught monolingually only in vocabulary at the 0.05 confidence level and in conceptualization at the 0.001 confidence level.

Nixon, B. W. "Navajo Parental Attitudes and the Effect of Bilingual Education on Student Self-Concept in San Juan School District 1969-70." EdD dissertation, Brigham Young-University, 1971.

The problem of this study was to determine (1) the effect of bilingual education on student self-concept, and (2) the attitudes of Navajo parents toward the schools and the bilingual program in the San Juan School District for the 1969-70 school year.

The data indicated the bilingual program had no noticeable effect on student self-concept. The data also indicated that parents are generally interested in the schools and bilingual program and they feel school is an important institution in meeting the current and future needs of their children. Generally, the parents like what is occurring in the bilingual program.

Olesini, J. "The Effect of Bilingual Instruction on the Achievement of Elementary Pupils." PhD dissertation, East Texas State University, 1971.

The purpose of this study was to evaluate the achievements of two composite groups of bilingual students in the subject areas of: vocabulary, reading, spelling, language, arithmetic computation and arithmetic concepts to determine if bilingual instruction had made a significant difference in the academic achievements of these children.

In the academic areas of spelling and arithmetic computation there was no significant difference in the achievements between the control and experimental groups. In the academic areas of vocabulary, reading, language and arithmetic concepts there was a significant difference between the achievement of the control and experimental groups. There also was a significant difference between the mean grade placements of the control and experimental groups.

The results of this study indicated that bilingual children of both sexes achieved greater gains in the academic curricula when they were instructed with bilingual methods.

Oxman, W. G. "The Effects of Ethnic Identity of Experimenter, Language of Experimental Task, and Bilingual vs. Non-Bilingual School Attendance on the Verbal Task Performance of Bilingual Children of Puerto Rican Background." PhD dissertation, Fordham University, 1972.

This study sought to determine whether bilingual minority group children showed evidence of alienation from school in a non-bilingual school environment, and whether attendance at a school with a bilingual program would have prevented or alleviated that alienation.

It was concluded that (a) bilingual minority group children were not alienated from school in a regular, non-bilingual school environment, that (b) attendance at a fully bilingual school may be associated with an increase, rather than a decrease in alienation, and that (c) effects of race or ethnic identity of experimenter may reflect distraction from a verbal task rather than an attitudinal factor such as alienation.

Perinpanayagam, G. T. "Towards Becoming Bilingual--Cognitive and Semantic Considerations in Language Acquisition." PhD dissertation, University of New Mexico, 1973.

The explanations and discussions were based on the "Language of Confidence" (Navajo) and the "Language of Survival" (English) with memory playing a decisive part.

Considering all the factors involved, the recommendation made is towards a greater emphasis on vocabulary rather than syntax--for this, in the opinion of the author, would be the most efficient and economic, if the terminal product is to be the second language dominant bilingual.

Ramirez, A. G. "The Spoken English of Spanish-Speaking Pupils in a Bilingual and Monolingual School Setting: An Analysis of Syntactic Development." PhD dissertation, Stanford University, 1974.

The purpose of this study was (1) to describe the developmental trends in the control of spoken English grammatical constructions produced by Spanish-speaking Mexican-American school children learning English in the elementary grades and on the basis of this description (2) to assess the comparative development of English and Spanish and those instructed only in English in a traditional monolingual school program.

One of the most important findings of this study was the general positive effect bilingual schooling had on the development of the spoken English of these pupils. The bilingually-schooled pupils produced more language overall, and when the language sample was segmented into T-units, they produced more structurally complete T-units. On measures related to syntactic complexity defined in terms of the number and type (nominal, adverbial, and coordinating) of sentence-combining transformations used, the bilingually-schooled pupils' performance was superior to the monolingually-schooled pupils by grade 2.

Ramirez, F. "Marketability of Bicultural/Bilingual Teachers in 1974 in the Los Angeles Unified School District." PhD dissertation, Claremont Graduate School, 1976.

The purpose of this study was to analyze the marketability of bicultural/bilingual teachers at both the elementary and secondary level in the Los Angeles Unified School District. One of the basic questions that had to be answered was the question of need. Was there a need for teachers with a bilingual skill and how great was that need?

The study found that the majority of the training programs at colleges and universities were training teachers for the wrong level and subject field--secondary Social Studies (Chicano Studies).

The study revealed that the largest market for Spanish speaking teachers was at the elementary level.

What this study suggests is that those teachers who are now entering or who are going to enter the teaching market and who have a bilingual skill (Spanish speaking), will be entering an expanding market for their skills at the elementary level. These conditions ought to prevail for the next five years. For inspite of a teacher surplus, there exists a severe teacher shortage at the elementary

l vel for those teachers who have the skills to implement a bilingual program.

Randle, J. A. W. "A Bilingual Oral Language Test for Mexican-American Children." PhD dissertation, University of Texas at Austin, 1975.

The 'most interesting independent variable proved to be the school attended by the child. When taken as a group, the children from two classes in a school located in the inner city *barrio* had lower scores in English than the children from the school located in a more heterogeneous community located only a few miles away. The former group had significantly higher scores in Spanish on all of the test scores and teacher rating categories. The group means on test scores of the first group were nearly equal for English and Spanish. The differences in Spanish and English language proficiency found in the two groups was attributed to differences in the attitude toward the use of Spanish and English and in the amount of use of the two languages in the family and in the community, rather than to a difference in instruction in the two schools.

Rivera, C. E. "Academic Achievement, Bicultural Attitudes and Self-Concepts of Pupils in Bilingual and Non-Bilingual Programs." PhD dissertation, Fordham University, 1973.

This study sought to ascertain and compare the academic achievement, the bicultural attitudes and self-concepts of third and fifth grade public elementary Hispanic and non-Hispanic pupils in a bilingual school and two non-bilingual schools in Community School District 12 of the Board of Education of the City of New York in 1972.

On the basis of the findings of this study, it was concluded that: (1) The bilingual and bicultural program of instruction in community school 211 in New York City benefitted the Hispanic child whose steady academic progression was comparable to that of the non-Hispanic. (2) The full impact of a bilingual program of instruction could not be immediately observed since time was a factor to be considered before an increase in reading achievement of greater magnitude could be observed. (3) The non-Hispanic in the experimental school demonstrated a decided potential to perform at or above the level of the non-Hispanic child in the control group. (4) Non-Hispanic children would suffer no loss of basic skills in their own language by being exposed to a program of second language instruction at an early age. (5) A residue of an undetected language handicap was at the base of the difference in scores between the Hispanic of the experimental group and the non-Hispanic of the control group. (6) The time devoted to the study of a second language was not affecting the growth in mathematics skills and understanding of concepts of the non-Hispanic pupils in the experimental group. (7) A transfer of training was occurring among the Hispanic subjects of the experimental pupil population whose observable progression in reading at the fifth grade level could be attributed to their greater understanding and command of the reading scores. (8) Although a bilingual and bicultural program would tend to be of immediate benefit to the Hispanic population,

its potential for developing greater and more positive cultural awareness between the two significant ethnic groups of the school population could not be minimized. (9) A bilingual and bicultural atmosphere generated greater feelings of acceptance for the Hispanic child and a consequent greater feeling of self-worth. (10) A bilingual and bicultural atmosphere might possibly influence the evolving of more positive feelings of self-worth among all its pupil participants.

Rodrigues, R. J. "A Comparison of the Written and Oral English Syntax of Mexican American Bilingual and Anglo American Monolingual Fourth and Ninth Grade Students." PhD dissertation, University of New Mexico, 1974.

The major problem investigated by this study was whether or not Mexican American bilingual fourth and ninth grade students represent the same language population in their English syntactic usage as do Anglo American fourth and ninth grade students in Las Vegas, New Mexico.

Only two significant differences were found. First, the average clause length of ninth grade bilingual subjects was shorter than that of ninth grade monolingual subjects in the written mode. Second, the average T-unit length of fourth grade monolingual subjects was longer in the oral mode than in the written mode. Also, the syntactic maturity measures tended to increase in size from fourth to ninth grade slightly more for monolingual than for bilinguals.

It was concluded that the bilingual subjects represent the same language population as the monolingual subjects in their English syntactic usage, except in average clause length in the written mode in ninth grade.

Rogers, S. "The Effects of a Bilingual-Bicultural Education Program on Academic Success and Self-Esteem." PhD dissertation, United States International University, 1973.

It was the purpose of this study to attempt to discover which of two approaches to language education, Bilingual and ESL, was most effective in developing academic achievement and positive self-concept in children with limited English speaking ability.

The statistical difference in the means of the two groups seemed to indicate: (1) that the Bilingual Program did produce a higher self-concept for Spanish-speakers and English-speakers, too; (2) that the Bilingual Program developed higher academic achievement for Spanish-speakers; and (3) that the ESL Program contributed to higher achievement for the English-speakers.

Schwartzberg, H. "The Effect of a Program of Choral Speaking on the Silent Reading Achievement of Sixth-Grade Bi-Lingual Puerto Rican Children in the New York City Elementary Schools." EdD dissertation, New York University, 1963.

The purpose of this investigation was to test the effect of a program of an oral language arts technique, choral speaking, upon elementary school children's silent reading achievement.

Consideration of the data derived from these comparisons indicate that the differences between the various groupings being compared were statistically negligible and were of such magnitude as clearly to be attributable to chance alone.

Skoczylas, R. V. "An Evaluation of Some Cognitive and Affective Aspects of a Spanish-English Bilingual Education Program." PhD dissertation, University of New Mexico, 1972.

The purpose of this study was to construct and apply an evaluation model to determine if bilingually instructed children in a particular program have in fact suffered a loss in linguistic, academic, or cognitive growth, and if their self-image and attitudes toward the two salient ethnolinguistic groups were less favorable than those of their monolingually instructed counterparts. A small-scale sociolinguistic survey of the participants and their immediate families was conducted and a socio-cultural description of the community was made in order to place the program in the greater environment in which the program operated and in which the children functioned and lived.

Conclusions: (1) When compared to monolingually instructed counterparts, the bilingually instructed pupils showed no evidence of either intellectual inferiority or superiority at the end of two years of bilingual instruction. (2) The bilingually instructed children are learning Spanish and English simultaneously with no apparent difficulty and with an apparent beneficial transfer effect from one language to another. (3) The experimental group's relatively inferior performance on the English Math test suggests that training in Math in Spanish received by most of the children in the experimental group did not transfer when measured in English. (4) The bilingually instructed pupils appear to be developing a positive and democratic attitude toward Anglo- and Mexican-Americans and a self-image that is favorable and not adversely affected by bilingual training. (5) There was no evidence reflected in attendance rates to suggest that the bilingual education program was more demanding than the traditional monolingual program. (6) The best single predictor of academic achievement and cognitive growth was parents' education.

Stone, E. R. "An Investigation to Determine the Relationship between Selected Family Variables and the General Ability of Young Spanish Speaking Children in Bilingual Education Classes (A Descriptive Study)." PhD dissertation, New York University, 1975.

This study investigated the relationship between general ability and selected family variables related to the home educational environment of Spanish speaking children in kindergarten and first grade classes in a Bilingual Program in Brentwood, Long Island, New York.

A descriptive analysis of the IFQ (Informal Family Questionnaire) suggested the following profile characteristics for children who scored high on the IAT (Inter-American Test of General Ability): Their parents resided in the country eight years or less, the number and order of siblings in the family and the presence or absence of stepparents were not significant, and the parents tended to be

more aware of school procedures and regulations and to be more involved in the bilingual school placement.

Talley, K. S. "The Effects of a Program of Special Language Instruction on the Reading and Intellectual Levels of Bilingual Children." PhD dissertation, University of New Mexico, 1965.

The purpose of this study was to determine the effectiveness of intensive English language instruction on the reading achievement levels and on the mental maturity levels of a group of bilingual children.

Hypotheses one and two were accepted and hypothesis three was rejected. The experimental group made a statistically significant gain in reading achievement and in mental maturity over those gains made by the control group. Contrary to expectations, the sixth-grade experimental group made greater gains in reading achievement and mental maturity than did the fourth-grade experimental group.

Treviño, B. A. G. "An Analysis of the Effectiveness of a Bilingual Program in the Teaching of Mathematics in the Primary Grades." PhD dissertation, University of Texas at Austin, 1968.

This study was an analysis of the difference in achievement levels in arithmetic fundamentals and arithmetic reasoning of primary grade children in Nye Elementary School, Webb County, Texas, under a bilingual (English-Spanish) program of instruction as compared to a similar program of instruction conducted exclusively in English.

Conclusions from the study include the following: For English-speaking children, (1) first graders taught bilingually did significantly better in arithmetic fundamentals, but not in arithmetic reasoning, than did first graders taught exclusively in English; (2) third graders taught bilingually did significantly better in arithmetic reasoning, but not in arithmetic fundamentals, than did third graders taught exclusively in English.

For Spanish-speaking children, (1) first graders taught bilingually did significantly better in arithmetic fundamentals; but not in arithmetic reasoning, than did first graders taught exclusively in English; (2) third graders taught bilingually did significantly better in arithmetic reasoning (for the total sample but not for the restricted sample), but not in arithmetic fundamentals, than did third graders taught exclusively in English.

Analysis of the frequency table showed that the Spanish-speaking children were generally below grade level in arithmetic fundamentals and arithmetic reasoning at the end of the first year in the bilingual program, but were above grade level by the end of the third year.

Vasquez, L. K. "An Experimental Pilot Bilingual Model School for Transient Mexican-American Students." PhD dissertation, University of Oregon, 1969.

In this dissertation there is an outline that has specific plans for a future experimental pilot bilingual model school for Mexican-Americans and an evaluation of a brief pilot testing program which has compared the achievements of Mexican-Americans in a

Southern California Junior High School under monolingual and bilingual teachers, using the Stanford Achievement Test. Although the results of the pilot program reveal some general information about the two groups, it did not establish any statistically significant difference; this fact is most likely explained by the briefness of the five week instructional period.

Velasquez, G. J. "Evaluation of a Bilingual Bicultural Education Program." PhD dissertation, United States International University, 1973.

The three main objectives of the study are the following:

- (1) To determine the academic achievement in Spanish and in English languages among Mexican Americans and Anglo American pupils.
- (2) To determine the self-concept among Mexican American and Anglo American pupils.
- (3) To record reactions via interview the way parents, students, and teachers react to the bilingual program.

Analysis of data resulted in 59 statistically significant hypotheses out of a total of 80. In the achievement studies, the English as well as the Spanish speakers in the primary (3rd) and secondary (7-12) grades made significant gains. The Pre-Post Studies revealed that the English and Spanish speakers in grades Kindergarten through Third made significant gains in the English language. None of the groups was higher than the other. The Spanish speakers, however, in grades Kindergarten through Third and Seventh through Twelfth made higher gains in the Spanish language.

The Self-Concept hypotheses revealed significant gains for all bilingual students in the program while the Interview Schedules performed with the students, parents and teachers indicate positive reactions to the program.

Three main conclusions resulted from the study. Evidence indicates that: (1) The Mexican American as well as the Anglo American students are reading in the English language as well as Spanish after having experienced a Bilingual Education Program for three years. (2) The self-concept of Mexican American as well as Anglo American children is enhanced in a Bilingual Program. (3) Parents and teachers feel positive about the program and want the program to continue.

Weffer, R. del C. E. "Effects of First Language Instruction in Academic and Psychological Development of Bilingual Children." PhD dissertation, Illinois Institute of Technology, 1972.

The purpose of this study was to assess the impact of bilingual education on the academic performance of first graders of Spanish-speaking background, and to explore empathy in teachers and teacher aides as a dimension in the bilingual program.

The data of the experimental-comparison groups was subjected to analysis of covariance. The differences between the two groups in Spanish language and Spanish mathematics were significant at the .05 level in support of the experimental group. The achievement in English language and English mathematics were the same for both groups.

The results of empathy in teachers and teacher aides showed a significant difference between the two groups. A difference in empathy between teachers of different ethnic background was observed.

Zirkel, P. A. "An Evaluation of the Effectiveness of Selected Experimental Bilingual Education Programs in Connecticut." PhD dissertation, University of Connecticut, 1972.

The purpose of this study was to assess the effectiveness of the experimental bilingual programs initiated in 1970-71 in the Connecticut cities of Bridgeport, Hartford, New Britain, and New London with respect to selected pupil and parent outcomes. The selected pupil outcomes were general academic abilities in Spanish and English and self-concept. The selected parent outcomes were involvement, attitudes, and awareness of the school program.

The analysis of the student outcomes in Bridgeport and Hartford generally favored the bilingual model of instruction. The differences between the experimental and control groups were statistically significant with respect to self-concept at Level I and academic abilities in both Spanish and English at Level II, favoring the bilingual model in each case. The somewhat differential findings with respect to academic abilities may have been due to differences in teacher qualifications between the two levels. The somewhat differential findings with respect to self-concept may have been attributable to a possible intervening instrument factor and to the differing relationships of the home and school environments.

Analysis of the interview results showed that parents of pupils in the bilingual model of instruction were more informed, interested, involved, and in favor of the school program at the end of the school year than were the parents of the control group children. These differences were definitely significant in one of these four criterion categories and possibly significant in another two in the light of relevant pre-existing differences found between the two parent groups.

Analyses of the quasi-bilingual models in New Britain and New London revealed slight and not significant differences between the experimental and control groups in each city with respect to the selected student outcomes. In the New Britain program, where a minor amount of subject matter instruction in the native language was provided by teacher aides, the control group slightly surpassed the experimental group with respect to all three dependent variables, the greatest margin was found for self-concept. These findings were attributed to the secondary status accorded bilingual instruction in terms of time distribution and staffing pattern.

In the New London program, where formal instruction through the native language was limited to "pull-out" periods with bilingual resource teachers, the experimental group generally, but not significantly, surpassed the control group with respect to the three dependent variables at each level. The lack of significantly positive results was attributed to the limited time and articulation of the bilingual pull-out periods and the limited role and resources of the bilingual resource teachers in relation to the regular program. The need for greater commitment and coordination was evident.

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Acknowledgments

The Center for Applied Linguistics expresses its special appreciation and thanks to those who participated in and prepared papers for the conferences, and to the Steering Committee and Advisors for their valuable suggestions, guidance and moral support throughout the project.

Conference Participants

George Blanco, University of Texas at Austin (Education & Synthesis)

José A. Cárdenas, Intercultural Development Research Association,
San Antonio (Education)

James Cummins, University of Alberta (Synthesis)

Charles A. Ferguson, Stanford University (Linguistics)

Lilly Wong Fillmore, University of California, Berkeley (Synthesis)

Joshua A. Fishman, Yeshiva University (Social Sciences)

Joseph O. García, San Diego State University (Education)

Gustavo González, University of California, Santa Barbara
(Linguistics)

William Hall, Rockefeller University (Education)

Byron Hansford, Council of Chief State School Officers, D.C.
(Education)

Evelyn R. Hatch, University of California, Los Angeles
(Linguistics)

Shirley Brice Heath, University of Pennsylvania (Social Sciences
& Synthesis)

Editor's Note: The information in parenthesis indicates the particular conference(s) in which individuals were participants.

- Richard J. Hiller*, Teitelbaum and Hiller, Attorneys at Law, New York City [formerly Puerto Rican Legal Defense and Education Fund] (Law & Synthesis)
- Dell Hymes*, University of Pennsylvania (Synthesis)
- Bea Medicine*, University of Wisconsin, Madison (Synthesis)
- Hugh Mehan*, University of California, San Diego (Social Sciences)
- Frederick Mosher*, Carnegie Corporation (Synthesis)
- Sarah Nieves-Squires*, New York University (Social Sciences)
- L. Leann Parker*, Center for Applied Linguistics (Synthesis)
- Christina Bratt Paulston*, University of Pittsburgh (Linguistics)
- Ernest Pérez*, Texas Education Agency, Austin (Synthesis)
- Stanley Pottinger*, Pottinger and Company [formerly U.S. Department of Justice] (Synthesis)
- Roy J. Rodríguez*, Office of Civil Rights, DHEW (Law)
- Sanford J. Rosen*, Rosen, Remcho and Henderson, Attorneys at Law, San Francisco (Law)
- Muriel Saville-Troike*, Georgetown University (Synthesis)
- H. Ned Seelye*, Illinois State Department of Bilingual Education, Chicago (Social Sciences)
- Roger W. Shuy*, Center for Applied Linguistics and Georgetown University (Synthesis)
- Edward Steinman*, University of Santa Clara School of Law (Law)
- Vivien Stewart*, Carnegie Corporation (Synthesis)
- María Swanson*, Bilingual Education Service Center, Arlington Heights, Illinois (Education)
- Herbert Teitelbaum*, Teitelbaum and Hiller, Attorneys at Law, New York City [formerly Puerto Rican Legal Defense and Education Fund] (Law & Synthesis)
- G. Richard Tucker*, McGill University, Montreal and Ford Foundation in Cairo (Linguistics)
- John Wabaunsee*, Native American Rights Fund, Boulder, Colorado (Law)

Brian Weinstein, Howard University (L2W)

Protase Woodford, Educational Testing Service, Princeton, New
Jersey (Education)

Steering Committee

Mario Anglada, ASPIRA of America, New York City

Will Antell, Minnesota Department of Education, Minneapolis

Joaquín Avila, Mexican American Legal Defense and Education Fund,
San Antonio

Arnold Leibowitz, Attorney at Law, D.C.

Roger W. Shuy, Center for Applied Linguistics and Georgetown University

Rudolph C. Troike, Center for Applied Linguistics

L. Leann Parker, Center for Applied Linguistics (Project Coordinator)

Project Advisors

John Lum, San Francisco Unified School District

John Molina, Office of Bilingual Education, USOE

Frederick Mosher, Carnegie Corporation

Sara Sackett, Carnegie Corporation

Vivien Stewart, Carnegie Corporation

Herbert Teitelbaum, Attorney at Law, New York City

Carmen D. Votaw, Office of the Commonwealth of Puerto Rico, D.C.